

Fig. 1A-1C

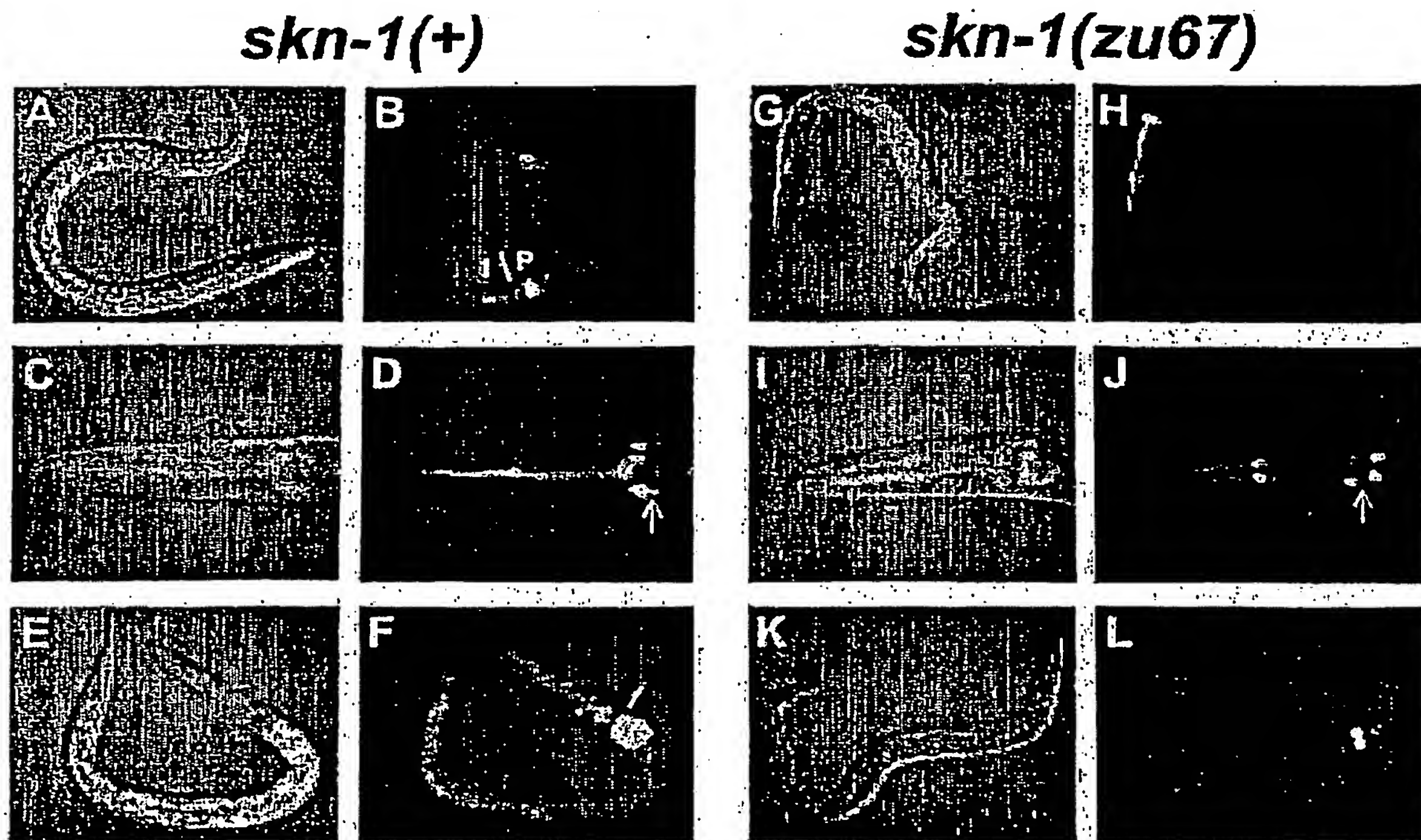
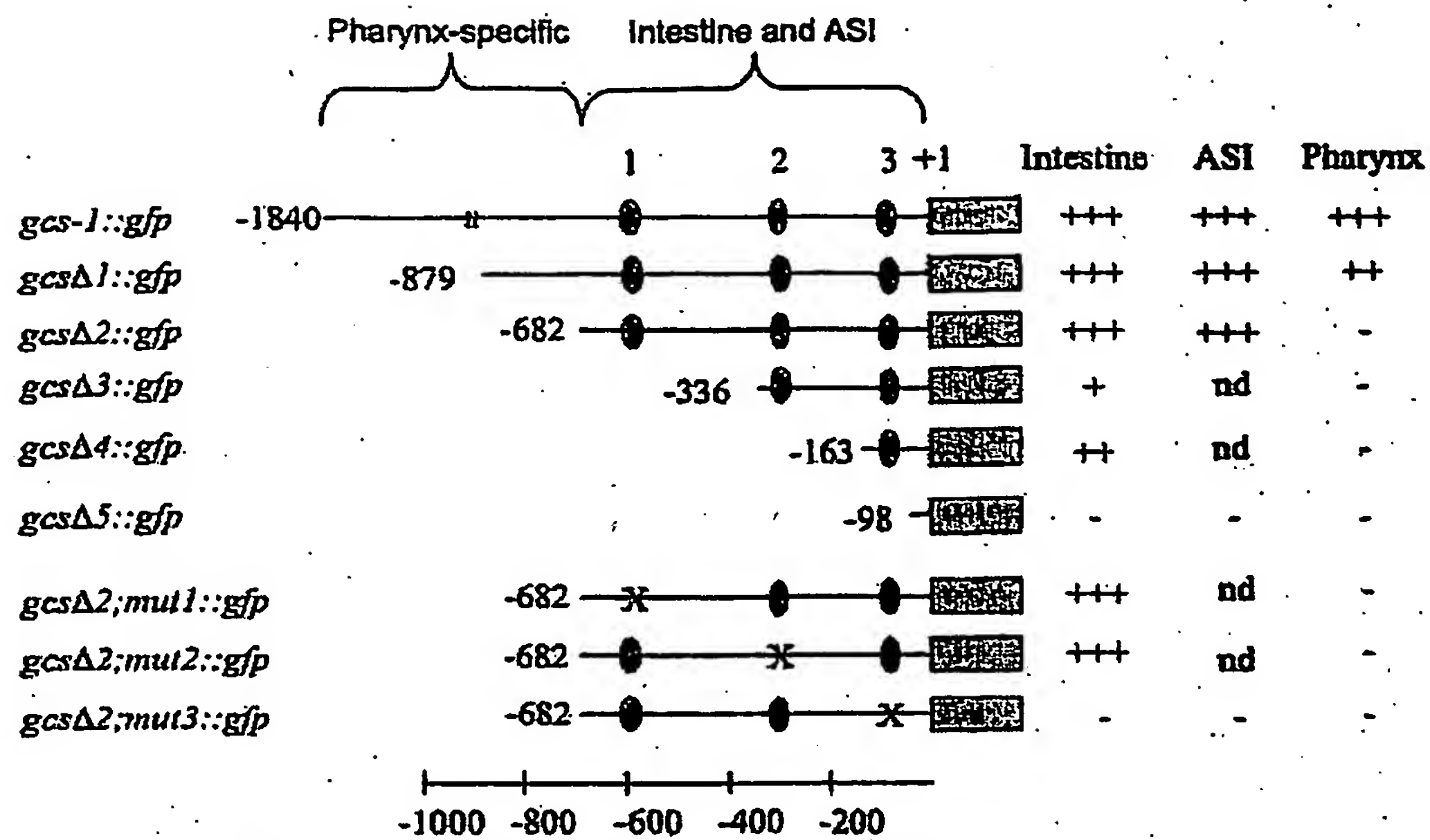
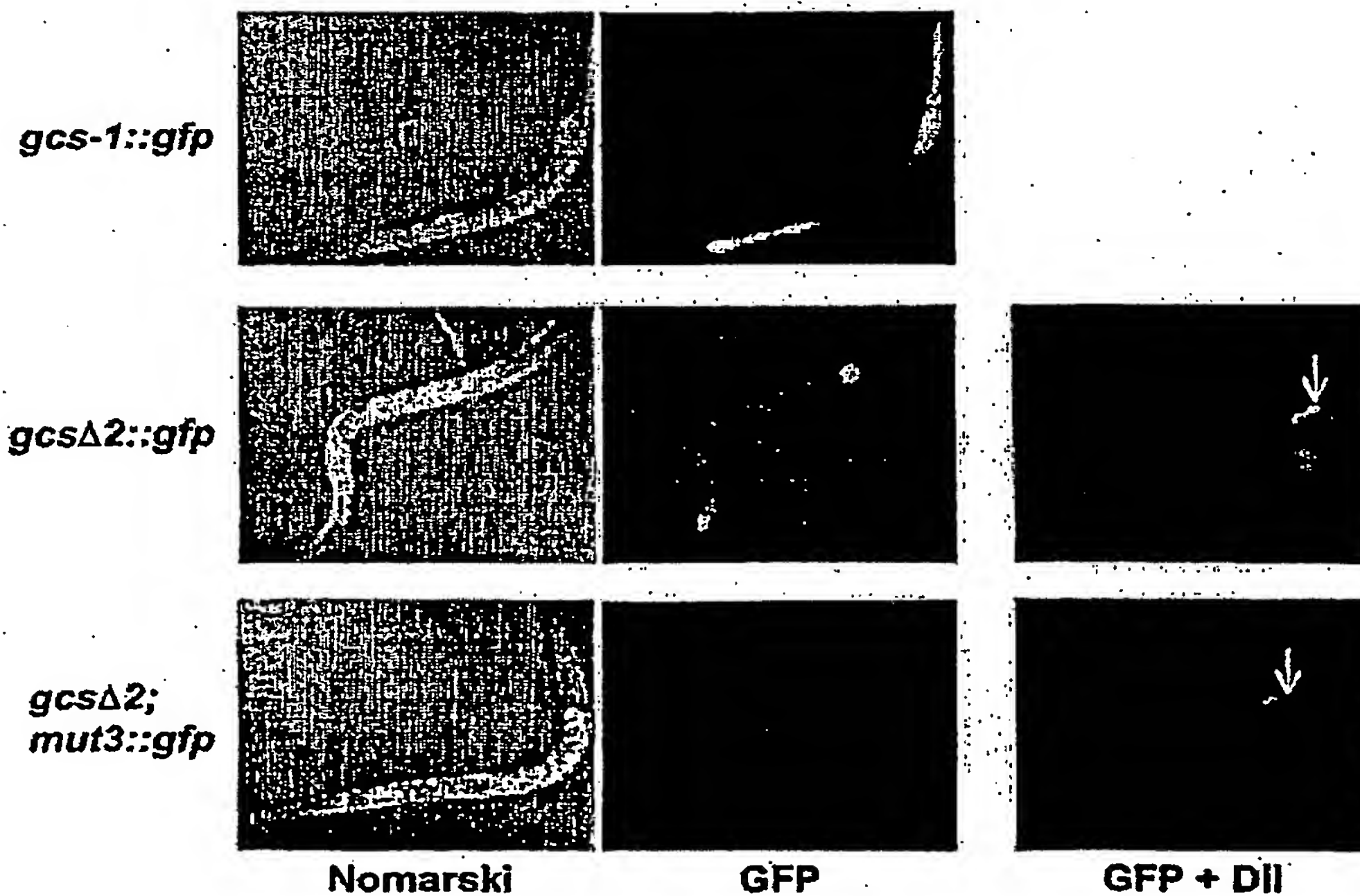


Fig. 2A-2L

A



B



C

<i>gcs-1</i>	-124	CA-CTTTATCATCATGA-GATTTAATGTTTCOTTTTGAT-TTTCI-83
<i>med-1</i>	-127	CACCTCTGTTCATCATGATGATTTTGTGGAG-CATTATCATCAITTCI-83
<i>med-2</i>	-127	CACCTCTGTTCATCATGATGATTTTGTAGAG-CATTATCATCAITTCI-83

Fig. 3A-3C

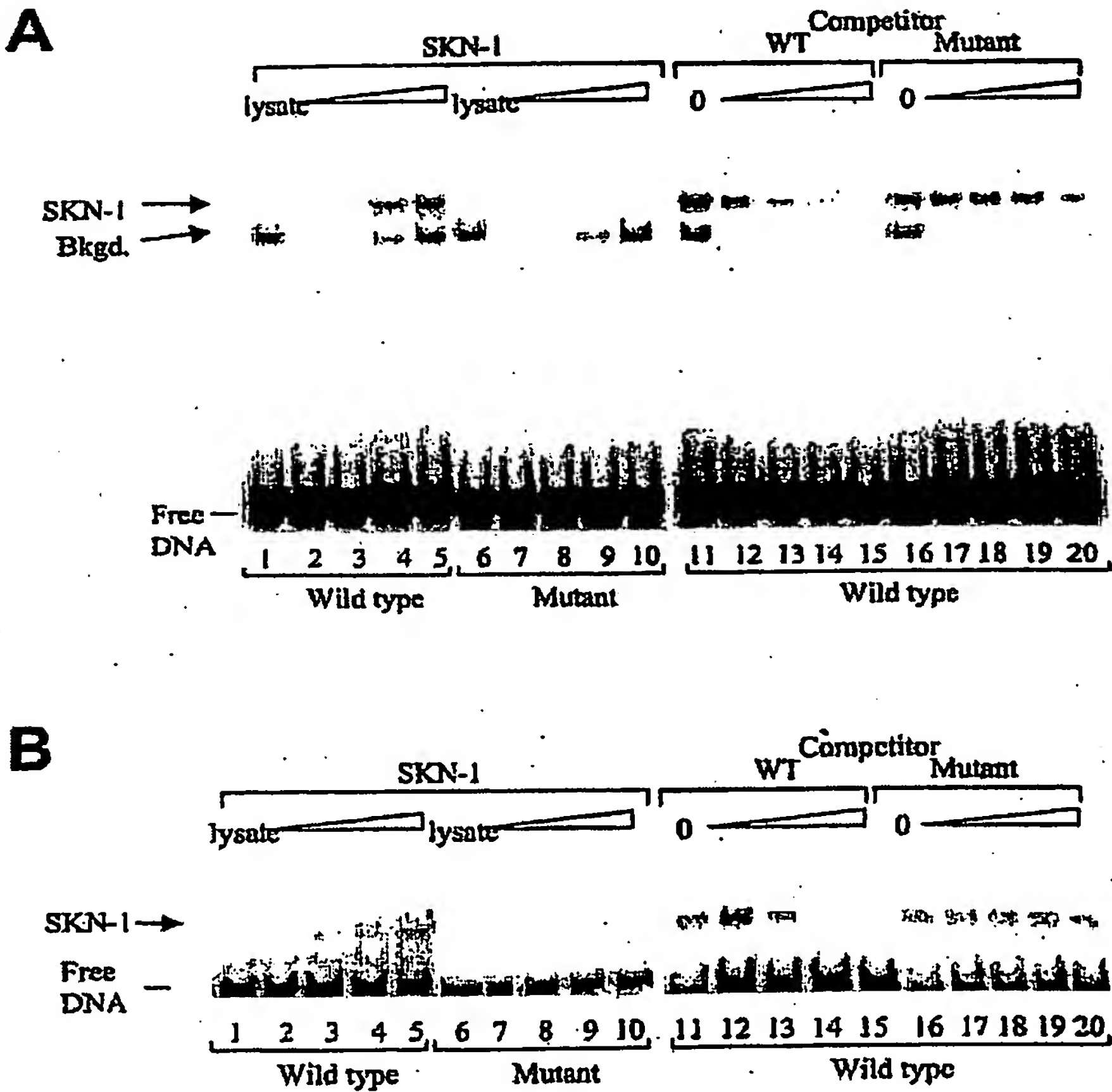


Fig. 4A-4B

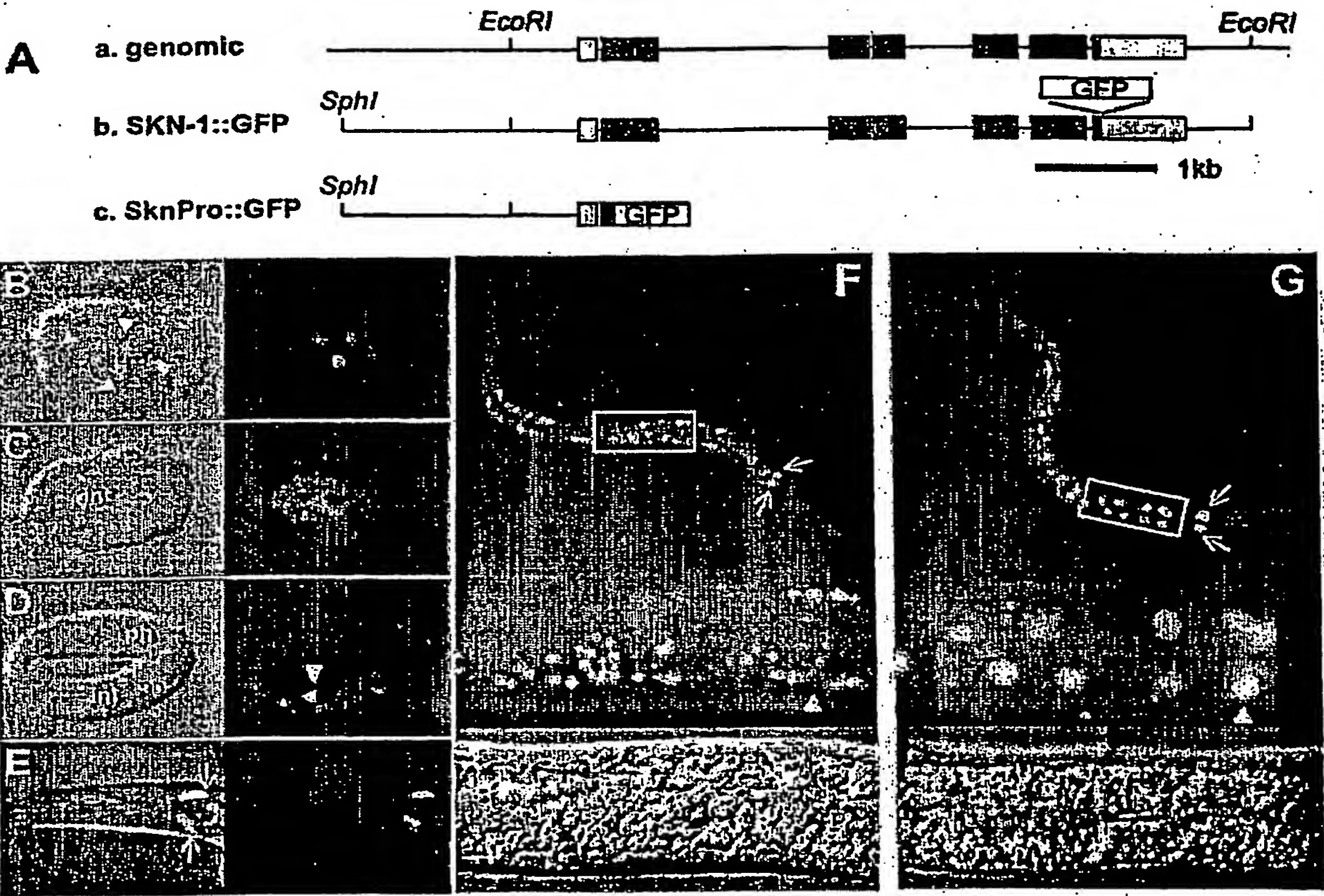


Fig. 5A-5G

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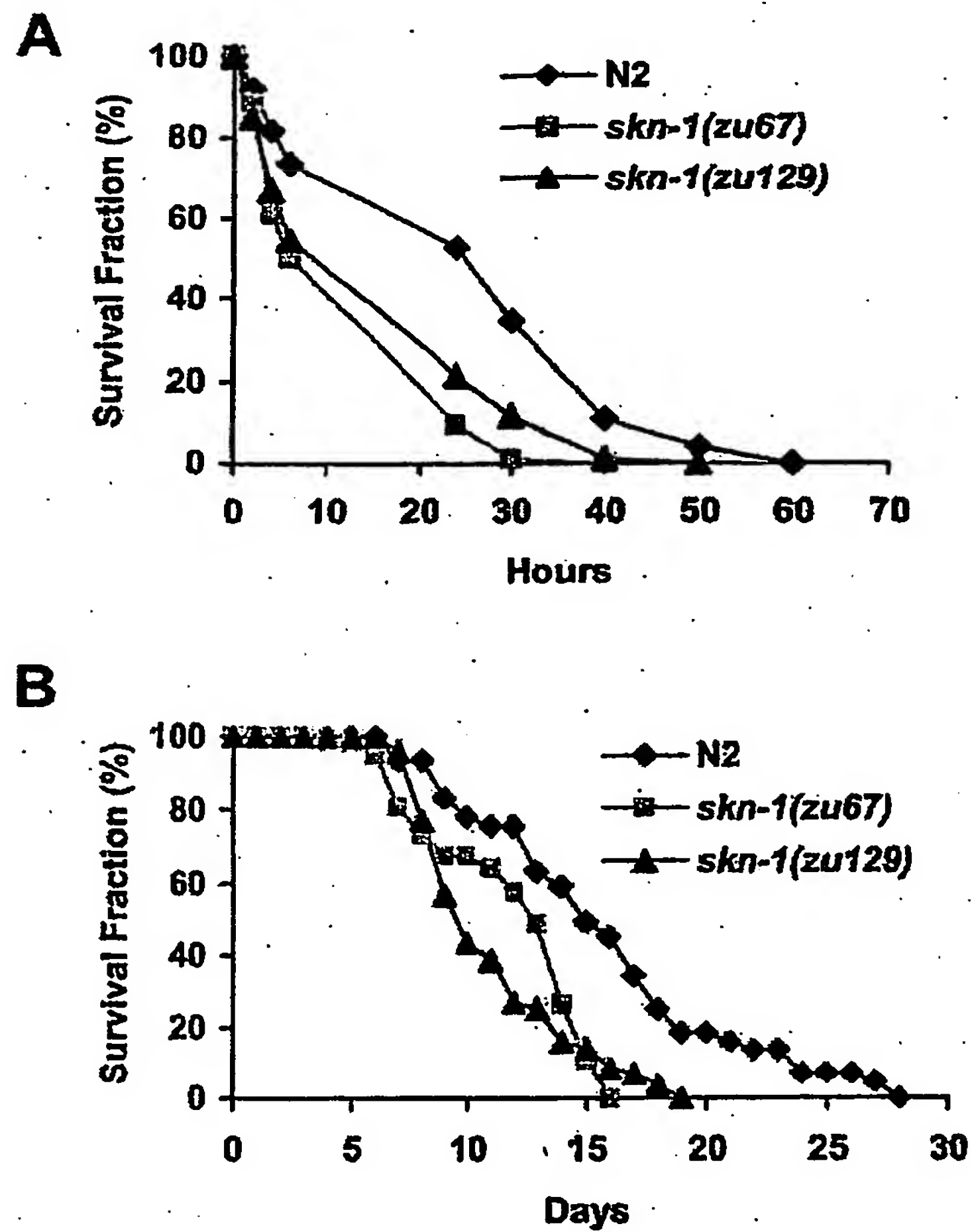
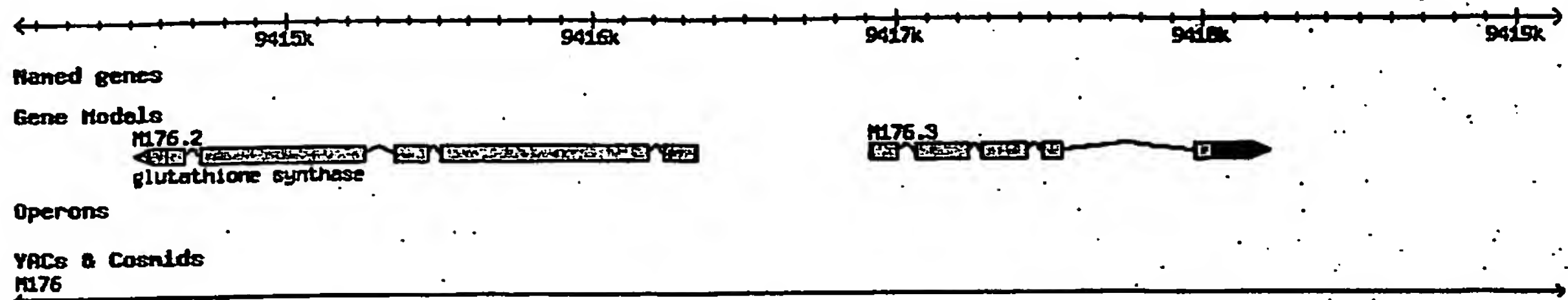


Fig. 6A-6B

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The M176.2 gene is located on chromosome II. Regulatory sequences can be found e.g., in the region between 9416340 and 9415915. An exemplary sequence of this region is as follows:

GACAATTATCGATTAATAAAAGTTTAAACAGACACGAGAAATTAAATATAAAAAATTGAATTGTTTATTT
 GTTGTTTTGTGTGTAGAAAAATAATTTTGATAGAAACAAAAATTAGCGTAAATAAATAGCTAGCGCAA
 TACTCGTGACGAGATGTGCGCCAGCAGCTCCTTGACGCAAACGTGACGTTTAGCACCAAATGATTTT
 -378
 TGCTCTTTGAGTTCTTTGTTTTTCGGGAGCAAATTCATGCCAATCCCTTTCTTTTTTCAAATTTTCCTG
 TTAAATTCATGTAATAACTATTATTCATGTCAATTACAACAAATAAGCATCCAAGATTTTATCATAAACT
 -243
 CGTTCAAACCTCCTTTTACCACTCGAAAAGCAATATCTCCGACTTCCTTCAAAGAGAAATGATGACAAAA
 -169
 CATAGAAACCTCACGTTATACGTTTTGTCATCACGATTCAGTGCTCACTTTTCTCATTTCATTCTCGCT
 -137
 TAATTCATTTTTGTCACTCTCGCGTCATGTTTTGCATTTTTTCGAAAGCATTTATTTAAAACTGAAAAA
 TAATTCGTAATTTTTCAAGAATGGCT

FIG. 7

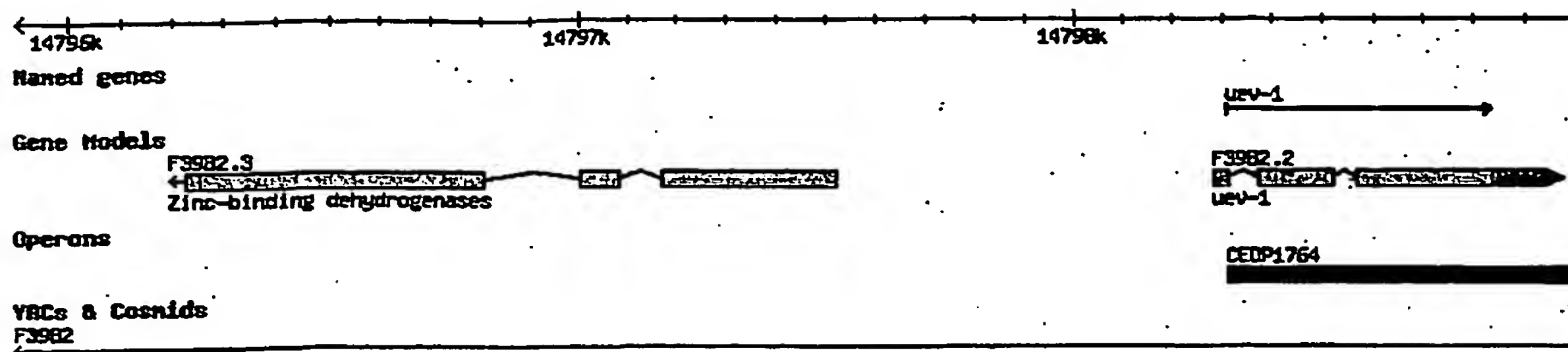
Exemplary M176.1 sequences:

Amino Acid Sequence									
MAQKDDRILL	LNAPRLPLED	DKLNELTADL	HDWAHANGLV	MRLSTDKLSS	EVCQTTPRTL	LPSFPKKNVF	EEAVHIQNLF		
ASLYHFIAYE	FDFLIDIHKN	VVKTDDEFTRN	MVEILKKVKA	OGLKQPVTLA	IQRSDYMCHK	DQYSAEYGLK	QIEINNIASS		
MGAHALRLTE	WHIRVLKALN	ISDDVIQRAI	PENKPIPMIA	EALFKAWSHF	SNFAAVVLVV	VENVNQNDID	QRHVEYELEK		
LGVPMTCIIR	RNLTQCYEQL	SLNDRSDLMI	DGRQVAIVYF	RAGYSPDHYP	STKEWEARER	MELSTAIKTP	WIGLQVANTK		
KTQQVLSEDG	VLERFIGKPR	EARDIRASFA	GMWALENTDE	VTMKVVAGAQ	KHPEAFVLKP	QTEGGAALHT	GDEMVOMLRE		
LPEEERGAFI	LMEKCLKPMII	ENYLVLAKKP	ITFAKAVSEL	GVYGYAFGRK	DAPELKTAGH	LLRTKPESTA	MGGVAAGHAV		
VDTPFLYEFT									

Spliced mRNA									
aaagaATGGCT	CAAAAAGATG	ACCGGATTTT	GCTGTTGAAT	GCTCCAAGGC	TCCCGCTCGA	AGATGATAAG	CTCAACGAGC		
TCACCGCTGA	TCTTCACGAT	TGGGCTCATG	CTAATGGGCT	TGTCATGCGT	CTATCAACCG	ACAAGTTGAG	CAGCGAAGTT		
TGTCAAACTA	CTCCATTAACT	ACTTCTTCCA	TCTCCATTCC	CGAAAAATGT	TTTTGAAGAA	GCAGTTCATA	TTCAGAACCT		
TTTCGCAAGT	CTTTATCACT	TCATAGCTTA	TGAATTTGAT	TTTCTAATCG	ATATTCTATA	AAATGTCTGT	AAAACCTGATG		
ATTTACACAG	GAATATGGTT	GAGATCTTGA	AGAAAGTCAA	AGCCCAAGGA	CTCAAGCAAC	CAGTCACTCT	CGCGATTCAA		
CGATCTGATT	ATATGTGTCA	TAAGGATCAA	TATTCAGCGG	AATATGGACT	GAAACAAATT	GAAATAAACA	ATATCGCCTC		
GTCAATGGGA	GCACATGCTC	TACGGCTCAC	CGAATGGCAT	ATCAGAGTTC	TTAAAGCGTT	GAACATTTCC	GATGACGTCA		
TTCAAAGAGC	AATTCCAGAA	AACAAGCCAA	TTCCAATGAT	CGCTGAAGCT	TTATTCAAGG	CCTGGTCCCA	CTTTTCGAAC		
CCAGCAGCTG	TGGTTCTTGT	CGTTGTAGAA	AACGTCAATC	AAAATCAGAT	TGATCAACGC	CACGTGGAAT	ATGAACTTGA		
AAAGTTAGGA	GTACCGATGA	CATGTATTAT	TAGAAGAAAT	TTAACACAAT	GCTATGAACA	ATTATCATTG	AATGATAGAA		
GCGATTTGAT	GATTGATGGG	CGTCAAGTAG	CAATTGTTTA	CTTCAGAGCA	GGATACTCAC	CTGATCATTG	TCCATCTACA		
AAAGAATGGG	AAGCACGTGA	GCGTATGGAA	CTTTCCACCG	CTATCAAAAC	TCCATGGATC	GGGCTACAGG	TGGCAAATAC		
TAAGAAGACC	CAGCAGGTTC	TTTCTGAAGA	TGGAGTACTC	GAAAGATTCA	TCGGAAAACC	ACGAGAAGCT	CGCGATATTC		
GAGCTTCATT	CGCAGGAATG	TGGGCTTTGG	AGAACACTGA	TGAAGTGAAT	ATGAAAGTCG	TGGCTGGAGC	TCAAAAACAT		
CCAGAAGCGT	TTGTTCTGAA	GCCACAAACT	GAAGGTGGAG	CCGCATTGCA	CACCGGTGAT	GAGATGGTTC	AAATGCTCCG		
AGAACTTCCG	GAAGAAGAGC	GTGGAGCTTT	CATTTTGATG	GAGAACTGA	AACCGATGAT	TATTGAAAAC	TACCTGGTTC		
TTGCAAAGAA	GCCGATCACA	TTTGCTAAGG	CTGTTAGTGA	ACTTGGAGTG	TATGGTTATG	CATTTGGAAG	GAAGGATGCA		
CCTGAGCTTA	AGACTGCTGG	GCATTTGCTC	CGAACGAAAC	CGGAATCCAC	AGCTATGGGT	GGAGTAGCCG	CCGGACATGC		
TGTTGTGAC	ACCCCATTC	TCTACGAATT	TATTTGAttt	cgaacataat	cagaaaactc	aacaaaaaatg	ctgtgatatg		
aaaccatttg	ctatttagat	ctttttgtgt	ttgtaaattt	aatcattgta	atttattgaa	tgt			

FIG. 8

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The F39B2.3 gene is located on chromosome I. Regulatory sequences can be found e.g., in the region between 14 797 521 and 14 798 310. An exemplary sequence of this region is as follows:

```

CATTTTGAAAGTGCCCAAGTTGCTGGAACGCTGAAAATTGAAATTATTAACAAAGAAATTTGCTTTAAAA
TCGAAAAATCAAGAAAAAATCGATAATTTTCGTCGGACAATCCGCCTGCTAGCACGGCTTGACGCTCGTT
TGCCGCGCGCTCATTCGATTTGTGTGAGTGCCAGTGGAGCGCGTTTGCTAAGGCTAACTGTGTAGTCCT
CTCGGACAAGATCTGTGAACATTGAAATGAAACACTTGGGTTCAATAAAATCACAAGAAATGATGACAA
                                     -518
TTTGTGTTGCGACCGAAAAAAATTATAAAATTGAATATTGGTTATCATCGTTTCAATCTTTGTTTTGT
-469
ATTAAAGGCACAGCTGCTAAAAATTGTTTTTTTTTTTCAATTTTGCTAAAAGAAAATCAATTTTCTGAT
TTTTTGTTGAGTTCCCGTGCAAATCAATGTCCTAGCTTTTAAAATTGTTTTTTGTTATGTAATTCTAAT
CAAATTTTGTGCAATTTTCAGAGATTTTCTGCTAAAACACTAAAAATAGTCTAAAAGTCGATAATTTGAT
AAACATTTACTCAAACCTTTTACGGAAAAATGAAACAAAAGTTGCAAAAATATAGTAATTTTCGCAATTTT
CTGAACGCGTACTTAAAGGTACACGGTTTGATTTCGGATTGGTCCCGCCACAAAGTGTTACCATAACATTT
TTCTCGCTGCGAGACCCATCCGAATAAATCCGTGCGCCTAATCAGTGCGAGTACGCATTTTCATATTACTG
ATAAGTGCCATTTTGTAGAACAATG

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FIG. 9

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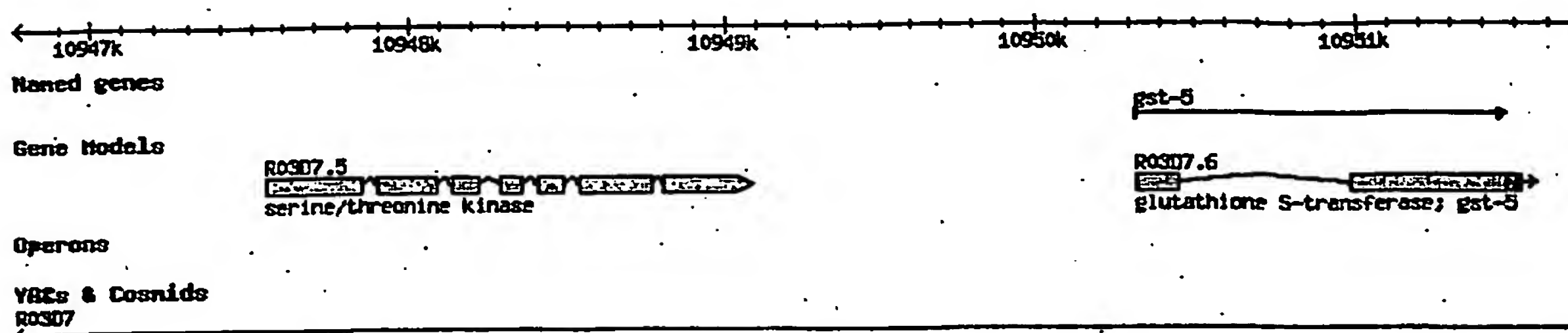
Exemplary F39B2.3 sequences:

Amino Acid Sequence							
MSKSICKSSM	RAAVVRRFGA	PDVIEAVESD	MPRLEKNQVL	VRNYAAGVNP	VDTYIRAGQY	GKLPNLPYVP	GKDGAGFVEL
VGESVKNVKV	GDRVWYGSEA	DSTAEYVAVN	RPFELPEGVS	FEEGASLGVP	YLTAYRALFH	LAGAKTGDVI	LVHGASGGVG
SALMQLAAWR	NIEAVGTAGS	ADGIRFVKSL	GARNVYNHSD	KQYVSKMKND	YPGGFNHIFE	MAAHTNLNTD	LGLLAPRGRV
AVIGNRAETT	INARQLMVTE	GAVYGVALGM	SSEAELLDFG	INIVSFLKET	EFRPLINKLY	RLEQLGLAHE	EIMNNKGAKG
NLVVQIEH							

Spliced mRNA							
ATGAGCAAAT	CGATTTGCAA	ATCAAGCATG	CGCGCAGCTG	TAGTCCGACG	ATTCCGGAGCA	CCTGATGTCA	TAGAAGCCGT
CGAGAGTGAT	ATGCCCAGGC	TTGAAAAAAA	CCAGGTTCTC	GTTCCGAATT	ACGCTGCCGG	TGTCAATCCA	GTTGACACAT
ATATTCGTGC	TGGTCAGTAT	GGAAAACACTAC	CAAATCTTCC	ATATGTACCA	GGAAAAGATG	GAGCCGGATT	CGTCGAACTT
GTGGGAGAAA	GCGTTAAAAA	TGTGAAAGTC	GGCGATCGAG	TCTGGTATGG	ATCAGAAGCG	GACAGTACAG	CAGAGTATGT
TGCGGTGAAT	CGACCATTCG	AGTTGCCGGA	AGGAGTTTCG	TTTGAGGAAG	GAGCTTCTCT	CGGAGTGCCT	TATCTTACCG
CTTATCGTGC	ATTGTTTCAT	CTTGCTGGTG	CAAAGACTGG	CGACGTTATA	CTTGATACACG	GAGCATCTGG	TGGAGTGGGA
AGTGCACTGA	TGCAGCTGGC	TGCCTGGAGG	AACATTGAAG	CTGTTGGCAC	TGCTGGATCT	GCTGATGGGA	TCCGGTTCGT
GAAGAGTCTT	GGTGCACGGA	ATGTCTATAA	TCATTCCGAT	AAGCAATATG	TGTCGAAAAT	GAAAATGAT	TATCCAGGAG
GCTTCAACCA	CATTTTCGAA	ATGGCTGCTC	ACACAAATCT	GAACACGGAC	CTCGGATTGC	TGGCTCCACG	TGGTAGAGTT
GCAGTAATTG	GAAATCGCGC	CGAGACCACG	ATCAACGCAA	GACAACTTAT	GGTTACAGAA	GGAGCTGTTT	ACGGTGTAGC
ATTGGGAATG	TCTTCCGAGG	CTGAGCTCTT	GGACTTTGGC	ATCAACATTG	TCTCATTCTT	GAAGGAAACC	GAGTTTCGTC
CACTTATAAA	CAAATTGTAT	CGTCTCGAGC	AATTAGGACT	GGCTCATGAG	GAAATTATGA	ACAACAAGGG	AGCGAAAGGA
AATCTTGTAG	TGCAAATCGA	ACATTAAttc	attatttttaa	cacgccattt	aaaggaa		

FIG. 10

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The R03D7.6 gene is located on chromosome II. Regulatory sequences can be found e.g., in the region between 10949088 and 10950317. An exemplary sequence of this region is as follows :

AGAACTTTTCGAGAAGTCTACCGTTGTAGTTTTCGAAATAGTAATTTATTTAGTGACGTTTATAAAGGTTTACATGATTT
GGTTTGGAATTTTGTAGGAGTTTATTCATAAAAACAAAGTAACCATGGACATTCCAGAAGTCTATAGTACACGCGATCC
TACCGTACCCTTCAGTATTTCTATCAGATTGATAGCTTTCGGTAGTCAGGTACAGCCTAAAAAATTCCTGCTTGCCCTTTT
TGCCTACATGTCTGCCTACCTTCAGTCATAATGCCTACATAATG

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ATTTTTCCAATTGAACTTGCAGACAGAAATTCAAATGGCAAAAAGAAACAAACACCGAAACATTAATCA

CATTTCTTTTCATATCAGTTTTCCTGTCAAAGCACATTTCTGGAGTCTGTGTGTATTTTTTTGTGTCTTTATGTGATCGG
TGTTGTGAAATTTGTAGTTGATGTTGATAACATACTTTTTTTTGAACAAAAAGTGATTGATTAGGCTTGAATTCAGAGA
TATGTTTCGTGATACTTTGCGATTCTCGAGCCAAAAACACGGTATCCGGTCTCGACACGACAACCTTTTCGCAAAATACAA
GCTGATGTGCGCCTTGAAAGAGTACTGTAATTTCAACCTTTCGTTGTTGCGGAATTTTCATAGTTTCTGGTTCAAATAT
ATGTATTTATTAACAAAAAACTAAAACAAAACAATTGAGAACACATAAATTGTGAAAAATCAATGAGACCACAGCAAAA
AATTTTGTATCTACAGTACTCTTTAAAGGCGCACATCCGTTCTTATTTTCAGCAAAAATGTCGCTTCGAGACCGGGTACC
GTATTTTTTTTTGTGCAAAACTTTAGGTCTAGGTAATATTAATAAAAAAATTCACAAAACCTAGAATCTAGAGCTTTCCAT
TAAATTTTTTGATGACATTTGAAAATTCATGATGATTTTTTTTCCAACAATTCGAAATATCCCTCTTTTCACCTGGTCC

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-282

ACTGAATTCTCTTTCCGAAAGACCACCACAATTTCAAGGCTCCGCCCATTTTCGTGGTTTGTAGCCTTCGCGACCCTAGGT
TTTTGATGACAATTGTGAGAGAAGTGAGAGGTTTCAGACACAAAAGCGACGTGGTTCGAATGA

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GTATAAATAGAGAGTGAAGTTTCCAATTTCCCTCACAATTGTTTGTTTGCAATCCACTTTCCAAAAAACACAACCTCAA
TCAAAAATCATTATGGTT

FIG. 11

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Exemplary R03D7.6 (gst-5) sequences:

Amino Acid Sequence

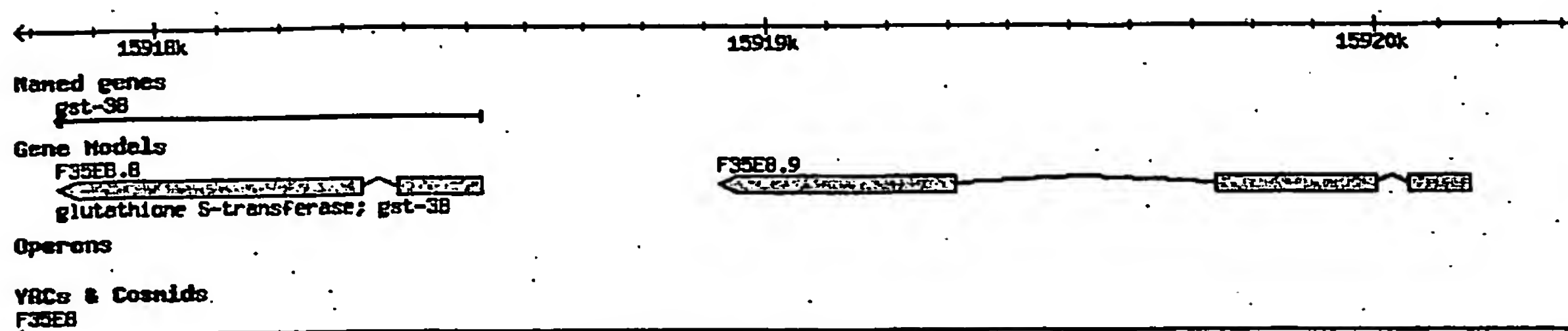
MVSYKLTYFN GRGAGEVSRQ IFAYAGQOYE DNRVTQEQWP ALKETCAAPF GOLPFLEVDG KKLAQSHAIA RFLAREFKLN
GKTAWEEAQV NSLADQYKDY SSEARPYFYA VMGFGPGDVE TLKKDIFLPA FEKFGFLVN FLKASGSGFL VGDSLWIDL
AIAQHSADLI AKGGDFSKFP ELKAHAEKIQ AIPQIKKWIE TRPVTPF

Spliced mRNA

ATGGTTTCCT ACAAGTTGAC CTAATTCAAT GGACGTGGCG CTGGAGAAGT GTCTCGTCAG ATTTTCGCCT ATGCOGGACA
ACAATACGAG GATAATAGAG TCACTCAGGA ACAATGGCCA GCATTGAAAG AAACCTGCGC TGCTCCATTC GGACAACTTC
CATTCCTCGA AGTCGACGGT AAGAAGCTTG CTCAATCCCA CGCGATTGCT CGTTTCTTGG CTCGTGAGTT CAAGCTCAAC
GGAAAAACCG CCTGGGAAGA GGCTCAAGTG AACTCTCTTG CCGATCAATA CAAGGATTAT TCAAGTGAGG CTCGTCCATA
TTTCTACGCT GTCATGGGAT TCGGTCCAGG AGACGTTGAA ACTTTGAAGA AAGACATCTT CCTTCCAGCA TTTGAAAAGT
TCTACGGATT CTTGGTCAAC TTCTTGAAGG CTTGCGGATC CGGATTCCTT GTCGGAGACT CTTTGACCTG GATTGACTTG
GCTATTGCCC AACATTCAGC TGATTTGATT GCCAAGGGAG GTGATTTGAG CAAGTTCCCA GAGCTCAAGG CTCATGCCGA
GAAGATCCAG GCGATTCCAC AAATCAAGAA ATGGATCGAG ACCCGTCCAG TCACACCATT CTAAatagct gtataaaatc
tgcaataaaa tatTTTTTTTT tttt

FIG. 12

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The F35E8.8 gene is located on chromosome V. Regulatory sequences can be found e.g., in the region between 15 917 841 and 15 918 925. An exemplary sequence from in or around this region is as follows:

TCTCATTCTCTTCAAGACATAACACAACGGGCTGACGACCATATCATCAACGACGATTTTTTAGGAACTG
 TACTTTATCTGTGTCTGACCAACACGTGTGAATGAAGTTTCAACTGGAAAATTTGTTTGAAACACTGCAA
 AGAATTTTGAATTTTGATGATAATTTTAAATGCCATTATCAGTTTAAATACGCCACTCTAGTCTTTGATT
 -240

CTTTGCACACACACACACACACACACACACACACACTCACAAACACGCCTGAAATTTTCGCAATATG
 CTGATTTAACGAGAAAACATTTGATGACAATAAACTTGCGTATTAATATAAAAGGGAAAATTCATTCA
 -94

GATTCTCAACGGTTTATTTTCTGTCACAACTCTTCCTAATATTCACCATGGTTT

FIG. 13

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Exemplary F35E8.8 (gst-38) sequences:

Amino Acid Sequence

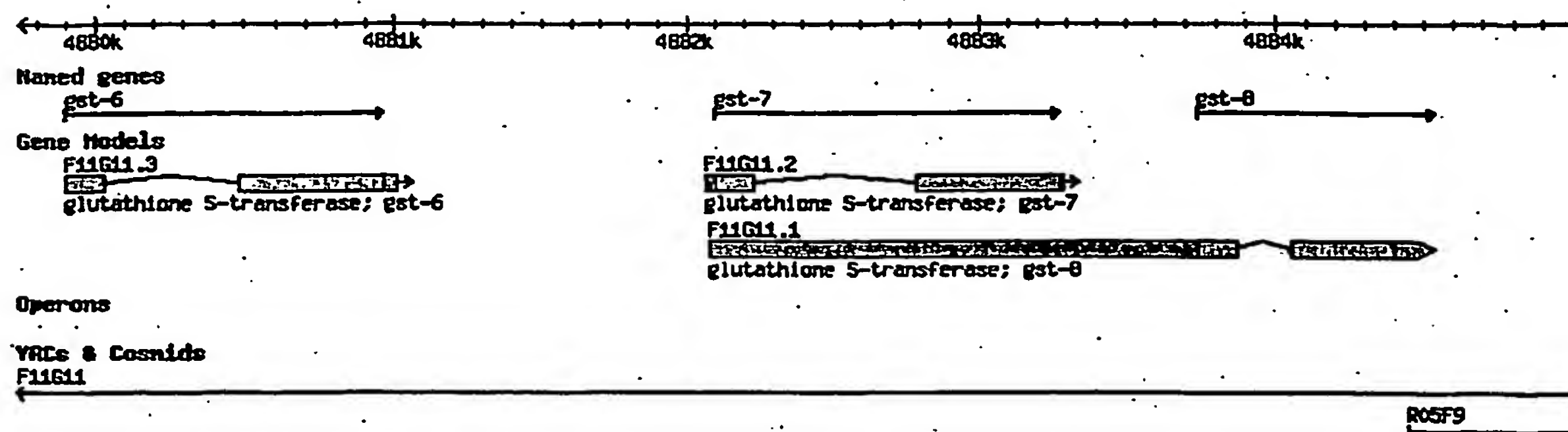
MVSYKLTYFD GRGAGELCRQ IFAAAEQKYE DNRLTDEEWE KFKAAAGKTPY NQLPMLEVDG KPLAQSHAMA RYLAREFGFN
GKSRWEEAQV NSLADQYKDY YAEARPYLAV KLGYTEGDAE ALYTSVYLPV FKKHYGFFVN ALKASGSGFL VGNSLTFIDL
LVAQHSADLL GREKSDLFND VPEMKAHSEK VQSIPQIKKW IETRPASDW

Spliced mRNA

ATGGTTTCCT ACAAGCTTAC CTACTTCGAT GGACGCGGAG CCGGAGAGCT CTGCCGTCAA ATCTTTGCTG CCGCCGAGCA
GAAATATGAA GATAACAGAC TTACCGATGA GGAGTGGGAG AAGTTCAAAG CGGCCGGAAA AACCCCATAC AACCAGCTTC
CAATGCTCGA GGTAGATGGC AAACCACTCG CTCAGTCCCA CGCGATGGCT CGTTATCTTG CTCGGGAATT CGGGTTCAAC
GGAAAGAGCA GATGGGAAGA AGCTCAAGTC AACTCCTTGG CCGACCACTA CAAAGACTAT TACGCGGAGG CTCGTCCATA
CCTCGCTGTG AAGCTTGGTT ACACAGAAGG AGACGCGGAG GCTCTTTACA CAAGCGTCTA TCTTCCAGTT TCAAGAAAC
ACTATGGATT CTTTGTCAAT GCTTTGAAGG CCAGCGGGTC AGGATTCTTG GTTGGAATT CCTTGACTTT TATTGATTG
CTTGTTGCTC AGCATTGAGC TGATTGCTG GGACGTGAAA AGTCGGATCT TTTCAATGAT GTCCAGAGA TGAAGGCACA
TTCCGAAAAA GTTCAGTCAA TTCCTCAGAT CAAGAAATGG ATTGAGACTC GTCCAGCGAG TGACTGGTAA

FIG. 14

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The F11G11.2 gene is located on chromosome I. Regulatory sequences can be found e.g., in the region between 4 880 968 and 4 882 068. An exemplary sequence in or around this region is as follows:

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AATTGAAATGAGTTTGCAATTTTGTATTATTTTAAATTCATATTTCAAGAAGCAATTTTGTCTAATTTGTTTTAATGG
AAATCGATGTTTCTAAATATCTTGAATGAATTGTTCTTTTAAAAATTTTATGGTAAAGTTTTCAGCAGGATGTTTCTAT
AGAAGCTTTTGCATTGCAAGAGTGTTGAAATATACAGGATATTTACAAAAGCCTGGGAAGTAGGCATGCTTTTAGGTAC
AAATCAGACCTACACCGCCTTCCTTTGTGGTTTACCATCATAGCTAAAACCTTCCGAACATTCCCTGGTGAGACACAATG
TTCAAAGCACAAAACCAATCACGTCATAATGTTAATTTGACTTTTATTGTCAAAAATTACAAAAGCGTCGTTTCTGGAA
CATGAACATAATAAGAATTTTCAAATTTCCGGTGGGCACAATAAATATGTAATCTTTTATTTATTTTGGAGGATAGTCTT
TTCAAAGGCAGGTGTATAACCCTCAAAGAAAGCACGTTTGTGTTTCAAAGTGAGACTTAAATTATTTCAAAGACAAATT
CCATAGGAAATCATTGTTTCATCAGGCACCTTCCCAGAAATTAGGCTGTAGGCAGGCACGTAGGCTGCGGTAAATGCCTAC
GCCTCTTTTGC GCGAGATTATGAAATTGTGTTGTACTGTGCGGAAAATTTCAGAAACAAAAAAATATTTTTTGTGACT
TTTTGTGTCAGTTATAGTAGTTTCTTATCATGGTATCTTCAATAATAATGGCAAGCGTAAC
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AAGATGATTGATGCCATGGGTTTATATTTGTGAGTAGTCACAAATTGTGACACAACATTCCCTTCGAAAGATCTGGAAAA
GTCACAAAACCTTGCATATATTTTTCACCAATATTATTTTGACCTACTCTGTTTCATCGTAACATTGCAACAACAAAA
AACGATGACTACACTTTATGATTTCTAGTCAACAACGTGCGCGCAATGTGTAGAGCAAATGATGACAAACTACAGAATAT
GGTGAGTGGAGAGACGACAGACATTTGAGAAATGGGTATAAATA
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GAGACGGCCGGCATTTCAGTGTTCAACCCTTCTCATCGACCACTCGATTTCTTGCTTGGTTATTTCAACAATG
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FIG. 15

Exemplary F11G11.2 (gst-7) sequences:

Amino Acid Sequence

MVHYKVSYPF IRGAGEIARQ ILAYAGQDFE DNRIPKEEWP AVKPSTPFGQ LPLLEVDGKV LAQSHAIARY LARQFGINGK
CAWEEAQVNS VADQFKDYLN EVRPYFMVKM GFAEGDLAL AKDVFLPGFK KHYGFFANFL KSAGSGYLVG DSLTFVDLLV
AQHTADLLAA NAALLDEFPO FKAHQEKVHS NANIKKWLET RPVTPF

Spliced mRNA

cgaccactcg atttcttgct tggttatttc aacaATGGTC CACTACAAGG TATCGTACTT CCCAATTGGT GGAGCTGGAG
AGATTGCTCG TCAGATCTTG GCCTACGCTG GACAAGACTT CGAGGACAAC AGAATCCCAA AGGAGGAATG GCCAGCTGTC
AAGCCAAGCA CTCCATTTCG ACAGCTTCCA CTCCTTGAAG TTGACGGAAA GGTTCCTTGCC CAATCTCATG CTATCGCCCG
TTRACTTGGCT CGTCAGTTCG GAATCAATGG AAAGTGTGCA TGGGAGGAGG CTCAAGTCAA CTCGGTTGCT GATCAATTCA
AGGATTACCT CAACGAAGTT CGTCCATACT TCATGGTGAA GATGGGATTT GCTGAAGGAG ATCTCGATGC TCTTGCCAAG
GACGTCTTCC TTCCAGGATT CAAGAAGCAC TATGGATTCT TTGCTAACTT CCTCAAGTCG GCTGGATCCG GATACTTGGT
TGGAGACTCT TTGACCTTTG TCGACTTGCT CGTCGCTCAG CACACTGCTG ATCTTCTGGC TGCCAACGCA GCTCTTCTCG
ATGAATTCCC ACAATTCAAG GTCATCAGG AAAAGGTTCA CTCGAATGCC AACATCAAGA AGTGGTTGGA GACTCGTCCA
GTTACTCCAT TCTAAatgat ttcca

FIG. 16

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The K08F4.7 gene is located on chromosome IV. Regulatory sequences can be found e.g., in the region between about 10141800 and 10142217. An exemplary sequence of this region is as follows:

ATTATCCAAAAAGATTAGAAGTTGGCAAACCTTGGGCAAGAATTTCCAGAGATTGCACTAAAGTTGTAGCCAAGTTTGAT
CCAACCTTTATCCAATCTTTTACTAAAATTATCCTTAAGACTATTTAAATTTTAGATAGAGAATTGGCGAGAGTTAGATCC
GACTTGGATATGACTTATAGTTAGCCTAACCTGAAGCTATTGCTTGCTTGATCATTTGGTTTATCGCTTTGCTACTTGGA
TAACCAGCTCCAATAGTTGTTATTTTGCCTTTTGTTCATCATTTT

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TCCACGATTTACACTCTCAAGTGAAACCAACTGTTCTTTGATGCCAGACGATGACATTACACTTGATAAGA

-83

AAATATATATAAACTGGAATTAAAAACAATTGATACATCGATTCAATTACTGAATTCTAATTATG

FIG. 17

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Exemplary K08F4.7 (gst-4) sequences:

Amino Acid Sequence

MPNYKLLYFD ARALAEPIRI MFAMLNVPYE DYRVSVEEWS KLKPTTPFGQ LPILQVDGEQ FGQSMSITRY LARKFGLAGK
TAEEDAYADS IVDQYRDFIF FFRQFTSSVF YGSDADHINK VRFEVVEPAR DDFLAIINKF LAKSKSGFLV GDSLWADIV
IADNLTSLK NGFLDENKEK KLEEFYNKIH SIPEIKNYVA TRKDSIV

Spliced mRNA

ATGCCAACT ATAAGCTATT GTATTTTGAT GCTCGTGCTC TTGCTGAGCC AATCCGTATC ATGTTTGCAA TGCTCAATGT
GCCTTACGAG GATTATAGAG TTTCAGTGGA AGAATGGTCA AAGCTGAAGC CAACGACTCC ATTTGGCCAG CTTCCCATT
TACAAGTCGA TGGAGAACAA TTCGGTCAGT CAATGTCTAT CACAAGATAC TTGGCAAGAA AATTGGACT CGCTGGAAAA
ACTGCAGAGG AAGAAGCTTA CGCTGATTCA ATTGTAGATC AATACAGAGA TTTCATATTC TTTTCCGTC AATCACTTC
TTCCGTTTTC TATGGAAGTG ACGCTGATCA TATTAACAAA GTACGTTTTG AAGTTGTTGA ACCAGCCCGT GATGATTCT
TGGCAATAAT CAATAAGTTC CTGGCCAAGA GTAAATCAGG ATTCCTCGTT GGAGACTCAT TGACTTGGGC TGATATTGTG
ATTGCTGACA ATTTGACAAG TCTCCTGAAG AATGGATTCT TAGATTTCAG CAAAGAAAAG AAGTTGGAAG AGTTCTATAA
CAAGATTCAT TCAATTCCAG AAATTAAGAA TTACGTGGCA ACAAGAAAGG ATAGTATTGT TTAAaatcga attatttaag
tctgaattat gtagtagta aaataatatc gttcctatca cgtctcccag agagcgtaat aaattattat tatgtg

FIG. 18

The *sod-1* gene is located on chromosome II. Regulatory sequences can be found e.g., in the region between about 6 973 806 and about 6 974 406. An exemplary sequence of this region is as follows:

```
ATTCCGCAACCCCGTCAAATTTAAGAAGAGAAAGAAAAAAACACAACGTGTTTGCACCTGTAAGGTAGT
TTTTTTTTTGTGCTTTCGGCGTTTTGATTCACATGAAAGTTTCTACGGAAAACTTTCATTGCATAACGA
TCTTCATATCTTGTTTCTGGAAACGAAATTTCCAACATGAAAGAAACCCGACGCTATTTATTCTCGCAA
CACAAAAATTTACATTTAAATAACCGCGGTTTTTCTCGAACAGCATATTTGACGCGCATTGCTCGTCAA
GTTTGATGCGTGCACACTATTTTGCTGTTGTTTTTTCTTTTTTCTCTAAATTTTCTTTACGCTTTCGTA
GTTTCTATAGAAACGATTCTCCACTCCCGGTTTTCTTCCGATTCTCAAATTAATTAAATTTAGTTATT
AAAAATCCTTTTTCTTGAAATAATCGTTCAATTTTCGAGTTTTCAAGAGTGGAGACGTTGAATTTGTGAGC
CGCTTATTTTTTCTGTGTTTTTGTGTTTTGTTGTTTTTAATCAGTGTCATAATCATACTTTCCATTGTTTCT
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TTATTATTCAAAGTTGTAGATTCAGTATTTTAGATCGGTGATG
```

FIG. 19

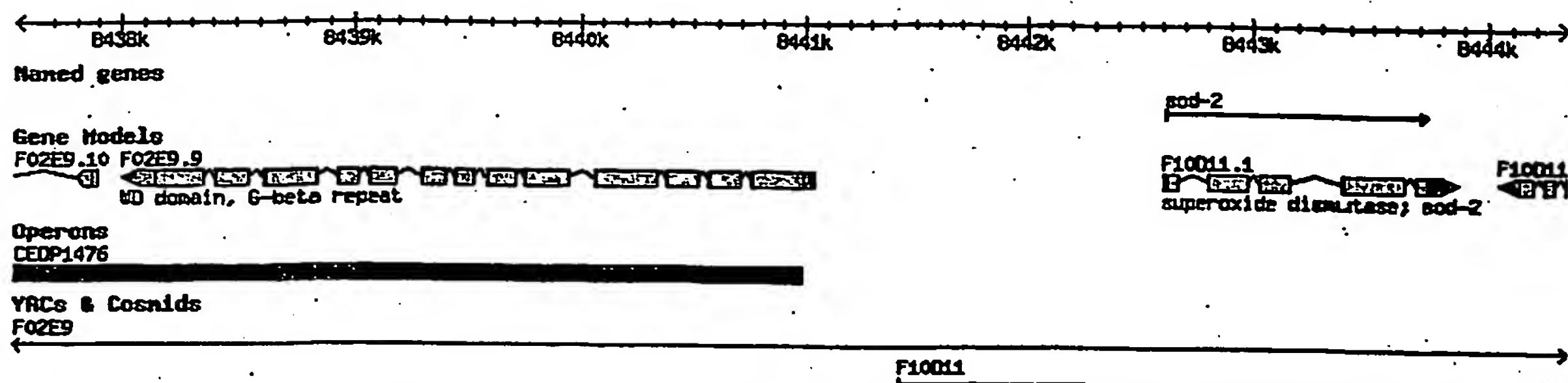
Exemplary sod-1 sequences:

Amino Acid Sequence									
MFVNLLTQVS	NAIFPQVEAA	QKMSNRAVAV	LRGETVTGTI	WITQKSENDQ	AVIEGEIKGL	TPGLHGFHVF	QYGDSTNGCI		
SAGPHFNPF	KTHGGPKSEI	RHVGD LGNVE	AGADGVAKIK	LTDTLVTLYG	PNTVVGRSMV	VHAGQDDLGE	GVGDKAEESK		
KTGNAGARAA	CGVIALAAPQ								

Spliced mRNA									
tttagatcgg	tgATGTTTAT	GAATCTTCTC	ACTCAGGTCT	CCAACGCGAT	TTTCCGCAG	GTCGAAGCCG	CTCAAAAAT		
GTCGAACCGT	GCTGTCGCTG	TTCTTCGTGG	AGAAACTGTT	ACCGGTACTA	TCTGGATCAC	ACAGAAGTCC	GAAAATGACC		
AGGCAGTTAT	TGAAGGAGAA	ATCAAGGGAC	TTACTCCCGG	TCTTCATGGA	TTCCACGTTC	ACCAATATGG	TGATTCCACC		
AACGGATGCA	TTTCTGCCGG	TCCACACTTC	AATCCATTTG	GAAAGACTCA	TGGTGGACCA	AAATCCGAGA	TCCGTCACGT		
AGGCGATCTA	GGAAATGTGG	AAGCTGGAGC	CGATGGAGTG	GCAAAAATCA	AGCTCACC GA	CACGCTCGTC	ACGCTTTACG		
GTCCAAACAC	TGTCGTTGGC	CGATCTATGG	TTGTTTATGC	CGGACAAGAC	GACCTCGGCG	AGGGAGTCGG	AGACAAGGCA		
GAAGAGTCCA	AGAAGACTGG	AAACGCCGGA	GCTCGTGCTG	CCTGCGGTGT	CATTGCTCTC	GCTGCTCCCC	AGTGActacc		
tgaatcgcgt	ctctgaatct	ccacacaatt	cctactaaag	acaatttttc	atttcttgct	ttgtcgttat	attcttaaga		
atcccgttgt	tcctactcct	actactgtat	attttcacat	aaaatttctt	caaaatttca	aataaagggt	gtagtttc		

FIG. 20

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The *sod-2* gene is located on chromosome I. Regulatory sequences can be found e.g., in the region between about 8 441 038 and 8 442 612. An exemplary sequence of this region is as follows:

TGAATAAAAACGTTGAACCCAACGGACATCAAAGTATCAAAGTAAGTAAGTAAGTAAGTAACCTGAATAAAAACGTTGCA
TATAAAAATCTACTCGAAAATTAAGTGAGAATTGAAGGATTGCTTTCCGAAGAGAAAATGACAATTATAGGGTATACTA
AAACATCAAAAATGTATATTAGACTACCATAAATATAAAACATCAGTGCTGCTCTCCAAGCTATTCTGACGGATTGCGAC
AACGAGCTCGCTGGAGTTGGCATCAGTGTGGAAGGCAGACACATAAGAAGACTCGAATTTGCGGATGACGTAGTCCTGAC
ATGTTCCACACCGGGAGAAGTTCAAGAACGACTGGAAATTTTGGACCGAATAAGTTCTAATTACGGACTCAAGATCAATC
AGTCAAAGACTGTTCTTCTGAAGAACAAGTTTTGCCGGAGCCAAGACGTCCTTTTCAACGGATCCCCCATCATTCCTCGTG
CCTGGTTGCCGCTATCTGGGTGCTGGATCGACATTTCTGGCTCAATTGACGAAGAGATCTCGAGGAGAATAAGAGCAGG
TTGGGGTGCTCTGGTTGGAATCAAAGAAGTCTTGAGAATCATGCCAAACAAGGAAAGAATCATCCTCTTCAAGCAAAAT
-980 -959

GTGCTACCAGCTCTCCTGTATGCTAGTGAACTTGGACTTGTAATGCTGGATCCACGTTGAGACTCAAAGAAGTGTGAC
CGGTCTCATCGACGCTGCAGAAATTCGAGGCTGGAACCTTCAACTTGGAACGTTACCTCCTTGCAAACAATCAAGATTTG
CAGGACACATTCTACGGAGAGATCCAAACCGATGGACAAAATCTGCACGGAATGGGACCGAGCCACAACAAAATTGG
AAACGTGCCGTTGGAGGACAGAAGAAGAGATGGGCTAAGGACATCGACGAAGAATACGCAAAATTCCACCACAATTCGCG
CATGTGCGGACAAGTCGTTGTTGGGAGAAGAAGACTAGGAATGCTCACTCCGAAGGCTCCATGGCTGTCCATCGCACGAA
CCGACCGTGAAAAATGGAAAGAGTTTGTCCGCAGTTGCCTCGCAACTTGAACCCAACGGACATCAAAGTATCAAAGTAAG
TAAGTAAGTAAGTAACCTGAATAAAAACGTTGCAATTAAAAAATCTACTCGAAAATTAAGTGAGAATTGAAGGATTGCTT
TCCGAAGAGAAAATGACAATTATAGGGTATACTAAAACATCAAAAATGTATATTAGACTACCATAAATATTACGATAAT
-363

TTAAAAATTACTAGAAACACGCAATTCGGCTCAAAAAGCAACAATTTAGACTGAAAACGAGCTAAAAGAATATTATTCAA
AAACCACTTTGCTCGGTAAATCTGGTGTATCATGTTCCGCAAACTGTCTTTTGTGTTTGGC
-191

TACTTTGTTTACGCGCATTCGAATTTCAAGTGTTCGCGCTTTTGTGTTTACTTTTTTATTTTTTCATCCAAAATCGTATTTT
CAGCTTGATATGTTTCTGCGAATTGTAAAAATTTATATTGACTATTGAATATTTTAATTATTTGACGCCGAAAATG

FIG. 21

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Exemplary sod-2 sequences:

Amino Acid Sequence

MLQNTVRCVS KLVQPITGVA AVRSKHSLPD LPYDYADLEP VISHEIMQLH HQKHATYVN NLNQIEEKLE EAVSKGNVKE
AIALQPALKF NGGGHINHSI FWTNLAKDGG EPSAELLTAI KSDFGSLDNL QKQLSASTVA VQSGSGWGLG YCPKGKILKV
ATCANQDPLE ATTGLVPLFG IDVWEHAYYL QYKNVRPDYV NAIWKIANWK NVSERFAKAQ Q

Spliced mRNA

tttgagccg aaaATGCTTC AAAACACCGT TCGCTGTGTC TCAAAGCTTG TTCAACCGAT CACAGGAGTC GCTGCTGTTC
GCTCGAAGCA CTCGCTGCCA GATTTACCAT ACGACTATGC TGATTTGGAG CCTGTAATCA GTCACGAGAT TATGCAACTT
CATCATCAAA AGCATCATGC CACTTATGTG AACAACTCTCA ACCAAATTGA GGAAAAGCTT CACGAGGCGG TCTCCAAAGG
AAACGTCAAA GAAGCTATCG CTCTTCAGCC AGCTCTCAAG TTCAATGGAG GAGGACATAT CAACCACTCC ATCTTCTGGA
CTAATTTGGC AAAGGACGGA GGAGAACCAT CGGCGGAGTT GCTCACCAGCA ATTAAGAGCG ACTTCGGATC TCTGGATAAT
CTTCAAAAAC AGCTTTCGGC ATCAACTGTC GCTGTTCAAG GATCAGGATG GGGATGGTTG GGATACTGTC CAAAGGGAAA
GATCTTGAAG GTTGCCACAT GTGCCAATCA GGATCCACTT GAGGCAACAA CTGGACTTGT TCCACTGTTC GGAATTGACG
TCTGGGAGCA CGCTTACTAC TTGCAGTACA AGAATGTTTCG ACCAGATTAT GTCAATGCTA TTTGGAAGAT CGCCAACTGG
AAGAACGTCA GCGAGCGTTT TGCAAAGGCA CAGCAATAAa tgagctgaat cacaagaatt aatcgtcaaa tgtagcagta
gaagttgact cccattgttt tgtaactatt tttgtttcct aattatttcg aaatgtaaatt tttcaaact tttcaaatga
aaagttttca ccg

FIG. 22

The *ctl-1* gene is located on chromosome II. Regulatory sequences can be found e.g., in the region near 14 306 135. An exemplary sequence of this region is as follows:

AAAAAAAAATCGATAAAAAATCCGCGTCAACGAAAGTTTAAAGTTACAGTATTTGTCGTTTCGAGACCGG
GTACCGTAGTTTTTGGTGAAAACATTGCAAAATTTGGTCAACAATTTTCATCGCTGCGAGACCGACACAAC
ACTTTATTTTATTTTGGGTTTCCCTTATCGCTTATCATAAACATGTGACGTCATCATCTCTGTACAGA
-997 -978

GCACCGCGACTGGGAGTATAAGAATCGCCGGAAAACATCAATAATCAGTTCGGTAGAAGTGAAAATTGAG
CGTAAAATATGATCATTTTTTCGATGCACCATATTTGACGCGCAATACTTCTACAAGCCGCTGTGTACTGC
-880

TCGTGGACAACCTTTGGATTATTTTTTGTTTTTTAAAATTCAAATAGTCAATATATTGCTTATTTATAGCG
CGCCTTTTTGACAGTAAGTTTGTCAAATTTGCGCGTAAGTTATGGTGTGTTGCACATATGCACCATACAGC
AACACCCCGCGGCCCGGCTAGTGGTACATCCATGCAAATGCGCTCTACTGATAATTTGAGTTTAACCAGG
TTTAGGCGCAAGATAAGAAAAAGCTTTGGACCAAAAAATTTAGAGTTTATTTTTTTTCGGACATTTTTTA
TATACATCACAAAAATATTGGGCCACTCGTTTTTGATAAAAACGACAAGCCCAAAGTTCAGGTATACGG
TAGACAAATTGCGTACAGGTACCACTTTTCCACGTAGTGCCAGGTTGTCCCATACGCTTTGATCTATGA
AAAATGCGGGAATTTTTTCGTCCAGAAAAATGTGACGTCAGCACGTTCTCAACCATGCGAAATCAGTTGAA
AACTCTGCGTCTATTCTCCCGCATTTTTTGTAGATCTGTAGATTTGTAGATCAATCCATTCCCCGTATAC
CCTGACCCATAATCAATACCTACCTAATTTTTGTCTTTCCCCCTACTTTTTTGCCTGTCCAAAATAAGCG
AGACTATGCCGTAGTCTGGTGTCCAACAACATGTTCTTATCAGTGATAACGCTACAATCTTCTTTCTTT
TTTCTCTGTTTCTCTTGTCTCTCCCAACCATATTCCGTATTACACCTCGTCGTGGTCATTTTTTTGTTT
AGAGTTTTATTTAATTCTAATTTCTAATACTAAATTTTTCAGA

FIG. 23

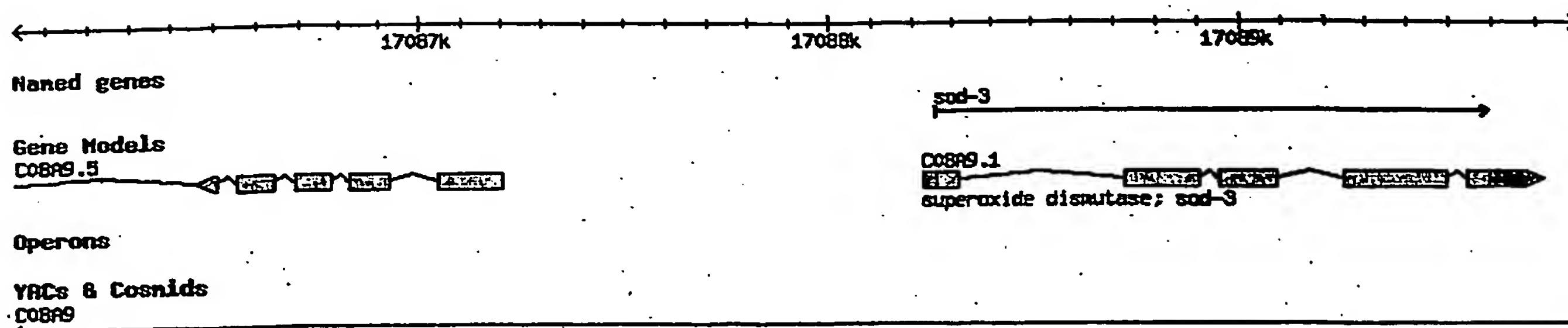
Exemplary ctl-1 sequences:

Amino Acid Sequence							
MPNDPSDNQL	KTYKETYPKP	QVITTSNGAP	IYSKTAVLTA	GRRGPMLMQD	VVYMDEMAHF	DRERIPERVV	HAKGAGAHGY
FEVTHDITKY	CKADMFNKVG	KQTPLLVRF	TVAGESGSAD	TVRDPRGFSL	KFYTEEGNWD	LVGNNTPIFF	IRDAIHFPNF
IHALKRNPQT	HMRDPNALFD	FWMNRPEI	QVMFLYSDRG	IPDGFRFMNG	YGAHTFKMVN	KEGNPIYCKF	HFKPAQGSKN
LDPTDAGKLA	SSDPDYAIRD	LFNAIESRNF	PEWKMFQVM	TFEQAЕКWЕF	NPFDTVКVWP	HGDYPLIEVG	KMVLNRNVKN
YFAEVEQAAF	CPAHIVPGIE	FSPDKMLQGR	IFSYPDTHYH	RLGPNYIQLP	VNCPYRSRAH	TTQRDGAMAY	ESQGDAPNYF
PNSFRGYRTR	DDVKESTFQT	TGDVDRYETG	DDHNYEQPRO	FWEKVLKEEE	RDRLVGNLAS	DLGGCLEEIQ	NGMVKEFTKV
HPDFGNALRH	QLCQKKH						

Coding							
CTGAAACCT	ACAAGGAGAC	GTATCCAAAA	CCCCAAGTGA	TCACAACTTC	aaaATGCCAA	ACGATCCATC	GGATAATCAA
CGTGCTCACC	GCCGGGCGGC	GTGGCCCAAT	GCTCATGCAA	GATGTAGTTT	AAATGGAGCT	CCGATCTACT	CGAAGACCGC
AACGTATCCC	CGAGCGTGTC	GTTTCATGCCA	AGGGAGCCGG	AGCCCATGGA	ATATGGATGA	GATGGCTCAT	TTCGATCGTG
TACTGTAAGG	CCGATATGTT	CAACAAGGTC	GGAAACAGA	CACCACTTCT	TACTTCGAGG	TCACCCATGA	CATCACCAAG
GGGATCCGCT	GATACTGTCC	GCGATCCACG	TGGATTCTCT	CTCAAATTCT	CGTTCGTTTT	TCAACGGTCG	CTGGAGAATC
GAAATAACAC	TCCGATCTTC	TTCATTCTGT	ACGCAATCCA	CTTTCGGAAT	ATACCGAGGA	GGGTAACCTG	GATCTGGTTG
ACTCACATGA	GGGATCCGAA	TGCGCTCTTC	GATTTCTGGA	TGAATCGCCC	TTCATTCATG	CCCTGAAGCG	CAATCCACAG
CTCGGATCGT	GGAATTCCTG	ATGGATTCCG	TTTTATGAAT	GGATACGGAG	TGAATCCATT	CATCAGGTGA	TGTTCTCTTA
GAAATCCGAT	TTATTGTAAA	TTCCATTTCA	AGCCTGCTCA	AGGTTCCAAG	CGCATACTTT	CAAGATGGTC	AACAAGGAGG
GCCTCTTCGG	ATCCAGACTA	TGCGATCCGC	GACCTGTTC	ATGCCATTGA	AATCTCGATC	CAACTGACGC	TGGAAAGCTC
CATTCAAGTG	ATGACATTCG	AACAAGCTGA	GAAATGGGAG	TTCAATCCAT	GTCAAGAAAT	TTCCCGGAAT	GGAAGATGTT
ATTACCCACT	GATCGAGGTC	GGCAAGATGG	TGCTGAACAG	GAATGTGAAG	TTGATGTCAC	TAAAGTTTGG	CCACACGGTG
TTCTGCCCCG	CCCACATCGT	CCCAGGAATC	GAGTTCTCGC	CAGACAAGAT	AATTATTTTC	CTGAGSTCGA	ACAAGCCGCC
CACGCATTAC	CATCGCCTTG	GACCAAATA	CATTCAGCTT	CCAGTCAACT	GCTCCAAGGG	CGTATCTTCT	CCTACACGGA
AACGCGATGG	TGCAATGGCT	TATGAAAGCC	AGGGAGATGC	GCCGAATTAC	GCCCGTACCG	CTCCCGTGCT	CATACCACTC
CGTGATGATG	TGAAGGAGTC	GACATTTTCA	ACGACTGGAG	ATGTTGATCG	TTCCCGAACA	GTTTCCGCGG	ATACCGTACT
GCAGCCACGT	CAGTTCTGGG	AGAAAGTGCT	CAAGGAGGAG	GAGAGAGATC	TTATGAGACT	GGAGACGATC	ACAACACGA
GTGGCTGTTT	GGAGGAAATT	CAAAATGGAA	TGGTCAAAGA	GTTCAAGAAA	GGCTCGTTGG	GAATTTGGCT	AGTGATTTGG
CATCAGCTCT	GCCAGAAGAA	GCATTAAatt			GTTTCATCCG	ATTTTCGAAA	TGCTCTTCGC

FIG. 24

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The *sod-3* gene is located on chromosome X. Exemplary regulatory sequences include:

TATTCGCAGAAAAAGTCGTTGCAAACATTCGTTTTTATATGTTTTTCTTTGAGAAAGCGTGGTTCATTT
 TTGAAAGTGAAAAATATTTGCTTAAACTTCCAAATTTAAATCTGCAGTGATTCAGAGAGGTTGAGAATT
 ATTTTCAAAAACATTCAATGTTTTCCCTTGGAGTGACTATGCAAATATGAAAATGTTTTCCAAAAATATT
 TGGATGCCCTGATAAAAAGTAGGTGAAATTTTCGCAGGGGAACATCATATTAATGTTGAATTTTATAGAA
 GAAATGGAAATGTTTGTCTGGTGGTATGCTCGAATATTTGAGATATTATATATTTACTGTTAAATCCGAAA
 TTTTGTGACAAACGGAAAAAATTTGTGTGCGAAATACTACATTTTCGATAACACAAAGGTACTTCCATAACA
 CTTATAAAAACCTGTTTGACTATCTTATTTTCAGGAAAAAAATCCAAGAATAAACATTTTTCAGAATTTG
 AACTTTCTAATGGCTGATTAATAAAACAAAGTTATACAACCTATTCAAAGCAGTTGCTCAATCTGGCATT
 TCTTGTGTTTTTTTTTTGAATATTTTCATCAGCAAGATGTTGATAATTTTGTGTTAATTCTAATTGTTTTCT
 ACAATTTTCAAACCGAAAATTGACCTTTGACTTTGTTTACTTTGTTCTCGTGGGTTAACTGTTCACTGA
 TTTCTATTGCTGTTGATGAGGTCTTTGATCAAATTTGTATTGTTTTTATACTGCATATTGCTTCAATTCT
 AAATCATCTAATATATTGTCAAACAACCTCTTGTTTTTTTTTTTTCATTCAAACCTCTGCAAAAACGTTCT
 -287

CTTAACAAAGGTTACACACAACCTCTCCTCTCCATCTCTTTCTCTCAACAACAATGTGCTGGCCTTGCA
 TGTTTGCCAGTGCGGGTTGTTTACGCGTTTTCAAGATTTTGGTCTCCTATCTAACGTCCCGAAATGCAT
 TTTTTCCTTTCAATTTGGTTTTTTTTCTGTTCGAGAAAAGTGACCGTTTGTCAAATCTTCTAATTTTCAGTG
 AATAAATGCTG

FIG. 25

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Exemplary sod-3 sequences:

Amino Acid Sequence

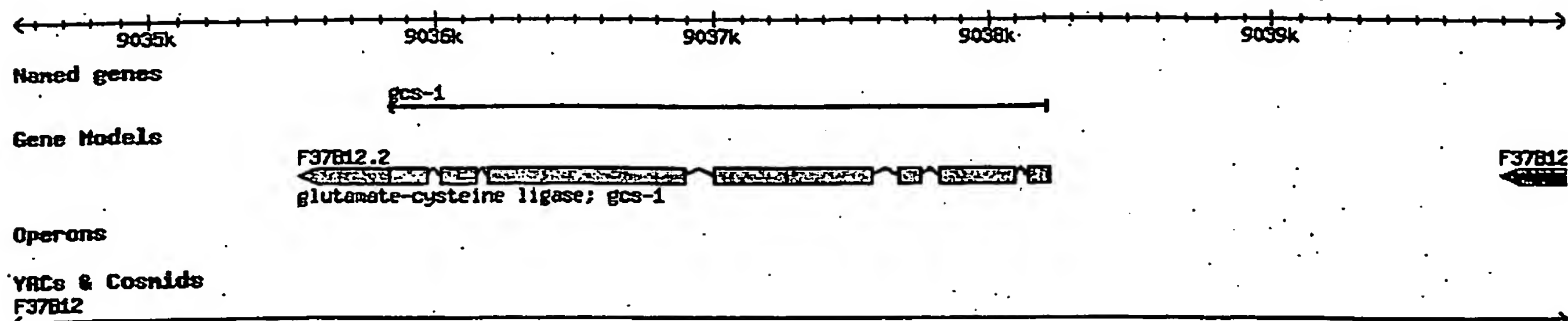
MLQSTARTAS KLVQPVAGVL AVRSKHTLPD LPEDYADLEP VISHEIMQLH HQKHHTYVN NLNQIEEKLE EAVSKGNLKE
AIALQPALKF NGGGHINHSI FWTNLAKDGG EPSKELMDTI KRDFGSLDNL QKRLSDITIA VQSGSGWGLG YCKKDKILKI
ATCANQDPLE GMVPLFGIDV WEHAYYLOYK NVRPDYVHAI WKIANWKNIS ERFANARQ

Spliced mRNA

cgtttggtcaa atctttctaattttcagtgaa taaaATGCTG CAATCTACTG CTCGCACTGC TTCAAAGCTT GTTCAACCGG
TTGCGGGAGT TCTCGCCGTC CGCTCCAAGC AACTCTCCC AGATCTCCA TCGACTATG CAGATTTGGA ACCTGTAATC
AGCCATGAAA TCATGCAGCT TCATCATCAA AAGCATCATG CCACCTACGT GAACAATCTC AATCAGATCG AGGAGAAACT
TCACGAGGCT GTTTCGAAAG GGAATCTAAA AGAAGCAATT GCTCTCCAAC CAGCGCTGAA ATTCAATGGT GGTGGACACA
TCAATCATT TATCTTCTGG ACCAACTTGG CTAAGGATGG TGGAGAACCT TCAAAGGAGC TGATGGACAC TATTAAGCGC
GACTTCGGT CCCTGGATAA CTTGCAAAAA CGTCTTTCTG ACATCACTAT TGCGGTTCAA GGCTCTGGCT GGGGATGGTT
GGGATATTGC AAGAAAGACA AAATCTTGAA GATCGCCACC TGTGCAAACC AGGATCCTTT GGAAGGAATG GTCCCACTTT
TTGGAATTGA CGTTTGGGAG CACGCCTACT ACTTGCACTA CAAAAATGTC CGCCAGACT ATGTCCATGC TATTTGGAAG
ATTGCCAACT GGAAGAATAT CAGCGAGAGA TTTGCCAATG CTCGACAATA Aaagcaggaa atattggaat tttcggtttt
acgaaaatat tgaagataat tcagatgtag tttaaaacgc tgagaatttg tattttttgta attgttttaa taaaagaacg
cacagttttt tctta

FIG. 26

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The *gcs-1* gene is located on chromosome II. An exemplary regulatory sequence is:

TTATCAACCACTAGGTTCCGTCTTAATCGTCCAAATATTGATCCGCTCGCTCGTGTTTTCTCAACTTCTTTATTTGCTGT
 GTTTTTCTGTTTCTATAGTTCTCCATTTTCCATCTCCTCTTCGCTTGTTGAATGGACTTTATTTTGATAAGTTCATTTTA
 ATTTTCTAACAATCTCATCACTAGCTCATGATGACAATTGCAAAGAAATTCGTCATATAGAGGGGAAAAATGCTGACAA
 -607

ATATTGAAAAGCCTTCAGGAGAGATGTAGAGACGTAGGAGTAGAGACAGAACATAAATTTGAGAAGCTTGTAGGGAGAAT
 AGACATAGAGTTACCATGGGAAAAACGCTCGCATTTTCCATTTAACGAGATTTTCTAGATCACAACATTTTGTGATCCGT
 TGTGCGAAAATCAAGCTTTTATCAAACCTTTATCGTCTGTTTCTTTCTGACAATCTTTATTATCTTATTAAACTTG
 ACTAATTGTATTGAAAGTATTTTTTTTAGATGCGAACGAAGTTCATTTTTCATGACTTAACATCTCTTAACGTTAGTGAA
 -316

ATTTTGAATTCCAATTAGGACTACGGTAGGAGTTCTGTAGTTGATTTCTGAACACTTGTTTTGTAACCTTTCTGAACG
 GATTTTAATATTTCTAAAATTTTAAATTGCAAATCTGAGTCCTATTAAAGATGTTTCATCCGTAAAACCAACAAACAAA
 ATATCACTTTATCATCATGAGATTTAATGTTTCCTTTTGATTTTCTGAATTGTTGTACTTTCCTTCAAACGACTTATTGA
 -121

ACTGATGTAACCTTCCTTCTAATGTTATCATTTGTATTTTTTTGCAGAATG

FIG. 27

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Exemplary gcs-1 sequences:

Amino Acid Sequence

MGLLTGKSPL	TWAETVPHID	YIKKHGIAQF	INLYHRLKSR	HGDQLKWGDE	IEYTIVKFDD	ANKKVRVSCK	AEELLNKLOA
EEQVNAMLGT	ANRFLWRPEF	GSYMIEGTPG	MPYGGLIACF	NIVEANMKLR	RQVVKLLKK	DETCLISIFP	SLGVPGFTFP
EVAADRKNDD	AANSVFWPEQ	AVFLGHPREF	NLTKNIKGRR	GSKVAINVPI	FKDNTNPSPF	VEDLSALGGP	DDTRDAKPDH
IYMDHMGFGM	GCCCLQVTFQ	AVNVDEARWL	YDQLTPITPI	LLALSAATPI	FRGKLSNVDS	RWDIISASVD	DRTPEERGLE
PLKNSKWVID	KSRYDSTDCY	IYPCSVGYND	IPLOYDETIY	KQLIDGNIDE	PLAKHIAHMF	IRDPHQVFRE	RIEQDDEKSS
EHFETIQSSN	WMNMRFKPPP	PDAPEIGWRV	EFRPTEVQLT	DFENAAYCCF	VVLLTRMMIS	FRLTYLMPIS	MVTENMKRAQ
QKDAVLNQKF	LFRKGLAECK	SAPENLKGSE	KCGPPSQDIE	EMSIDEIING	KKNGFFGLIS	LIRQFLDSAD	VDVDTRCTIS
QYLNFIKRA	TGEINTLAHW	TRGFVQSHPA	YKHDSVDNDN	IVYDLLKKMD	AISNGEDHCE	KLLGCYRSKT	DHAISAAVRK
AEEHMIVSSQ	KRAH						

Spliced mRNA

tttgcagaAT	GGGTCTTTTG	ACGAAAGGTA	GTCCGTTGAC	GTGGGCAGAA	ACCGTACCGC	ACATTGATTA	TATCAAGAAG
CACGGAATTG	CTCAATTCAT	CAATCTCTAC	CATCGTCTGA	AATCAAGACA	CGGAGATCAA	TTGAAATGGG	GAGATGAGAT
TGAATACACT	ATTGTAAAT	TTGATGACGC	AAACAAGAAA	GTTTCGCGTGT	CGTGCAAAGC	TGAAGAGCTT	CTTAATAAGT
TACAAGCCGA	AGAGCAGGTG	AATGCGATGC	TTGGAAGTGC	CAATCGATTC	CTTTGGAGAC	CAGAATTCGG	ATCCTACATG
ATCGAGGGAA	CCCCCGGAAT	GCCTTACGGA	GGTCTCATCG	CTTGCTTCAA	CATTGTCGAG	GCAAACATGA	AATTGCGCAG
ACAGGTCGTC	AAAAAGTTAT	TAAAGAAGGA	TGAAACATGT	CTATCGATAT	CGTTCCCATC	TCTTGGAGTA	CCTGGATTCA
CATTCCCAGA	AGTAGCAGCT	GATAGAAAGA	ATGATGATGC	AGCTAATAGC	GTTTTCTGGC	CAGAACAAGC	TGTATTCTTG
GGCCATCCAC	GTTTCAAGAA	TCTTACCAAA	AATATTAAAG	GTCGCAGAGG	AAGTAAAGTA	GCTATCAACG	TCCCGATATT
CAAGGATACG	AACACCCCCA	GTCCATTTCG	TGAAGATTTA	TCTGCACTTG	GAGGTCCTGA	TGATACTCGT	GATGCGAAAC
CTGATCACAT	TTATATGGAT	CATATGGGAT	TCGGAATGGG	GTGCTGTTGT	CTTCAAGTCA	CTTTCCAGGC	TGTGAACGTC
GATGAAGCCA	GATGGTTGTA	CGATCAGCTG	ACACCGATTA	CACCGATTCT	ACTGGCACTC	TCTGCCGCCA	CACCAATCTT
CCGTGGAAAA	TTATCCAATG	TCGATTCTAG	ATGGGATATC	ATTAGTGCAA	GTGTCGACGA	TCGTACACCG	GAGGAAAGAG
GATTGGAACC	TCTCAAGAAT	TCGAAATGGG	TTATTGATAA	GAGTCGCTAC	GACTCCACGG	ACTGTTACAT	TTATCCATGT
TCTGTTGGCT	ACAATGATAT	TCCTCTTCAA	TACGACGAAA	CCATATATAA	ACAACATAAT	GATGGAAATA	TTGATGAGCC
ACTGGCAAAA	CATATTGCGC	ATATGTTTCA	TCGTGATCCA	CATCAAGTTT	TCCGTGAGCG	TATCGAACAG	GACGATGAGA
AAAGCAGTGA	ACACTTTGAA	ACAATTCAAT	CATCGAATTG	GATGAACATG	CGATTCAAGC	CACCACCACC	AGATGCTCCA
GAAATCGGAT	GGAGAGTCGA	ATTCCGGCCA	ACTGAAGTTC	AACTGACCGA	CTTTGAAAAT	GCAGCATACT	GTTGCTTCGT
TGTATTGCTC	ACCAGAATGA	TGATCTCCTT	CAGGCTGACA	TATTTGATGC	CAATTTCAAT	GGTTACTGAA	AATATGAAGC
GTGCTCAGCA	AAAAGATGCA	GTTCTCAATC	AGAAATTCCT	GTTTCAAGAA	GGATTGGCTG	AGTGCAAATC	TGCTCCCGAA
AATTTGAAAG	GATCGGAGAA	ATGTGGACCA	CCTAGTCAAG	ATATTGAAGA	AATGTCGATT	GATGAGATTA	TCAATGGAAA
GAAAAATGGA	TTCCCAGGTC	TCATTTCACT	TATTCGCCAA	TTTCTAGATT	CTGCTGATGT	TGATGTGGAT	ACTCGGTGTA
CGATTTCTCA	ATATTTGAAC	TTTATTTTCA	AACGAGCAAC	TGGAGAGATT	AATACTTTGG	CTCACTGGAC	ACGTGGATTC
GTACAATCTC	ATCCTGCATA	CAAACATGAC	AGTGATGTAA	ATGATAATAT	AGTTTACGAT	CTTTTGAAAA	AGATGGATGC
CATCTCAAAC	GGAGAAGATC	ACTGTGAGAA	GCTGCTCGGA	TGCTACCGCT	CTAAAACCGA	TCATGCCATT	TCTGCTGCTG
TTCGCAAAGC	TGAAGAGCAC	ATGATCGTGT	CCAGCCAAAA	ACGTGCACAT	TAGgcgataa	ttgattgatt	atgtgatttt
aattttattta	tgttctatac	gtcgtgtttc	ccatttccttc	taggccttcc	atgattcaca	atttttcgat	gccatatcaa
tttagttggc	catctacatt	aaattactga	tatgtttgatg	ctattttcta	gtaagcagat	gtcagtgttt	agtaattcaa
aaatttaaac	tctgaatttc	taaatgcttg	tttttttgagt	agtaggaatc	agtacgaatg	gtacattaat	ctgaaaataa
tttcatattt	atgtacaatg	ctcccctgaa	tccatcatat	aattattatc	cgtgtttg		

FIG. 28

T19E7.2c (conceptual translation)

MYTDSNNRNF	DEVNHQHQQE	QDFNGQSKYD	YPQFNRPMGL	RWRDDQRMME	YFMSNGPVET	VPVMPILTEH
PPASPFGRGP	STERPTTSSR	YEYSSPSLED	IDLIDVLWRS	DIAGEKGTRQ	VAPADQYECD	LQTLTEKSTV
APLTAEENAR	YEDLSKGFYN	GFFESFNNNQ	YQQKHQQQQR	EQIKTPTLEH	PTQKAELEDD	LFDEDLAQLF
EDVSREEGQL	NQLFDNKQQH	PVINNVSLSE	GIVYNQANLT	EMQEMRDSCN	QVSISTIPTT	STAQPETLFN
VTDSQTVEQW	LPTEVVPNDV	FPTSNYAYIG	MQNDLQAVV	SNGQIDYDHS	YQSTGQTPLS	PLIIGSSGRQ
QQTQTSPGSV	TVTATATQSL	FDPYHSQRHS	FSDCTTDSSS	TCSRLSSESP	RYTSESSTGT	HESRFYGKLA
PSSG\$RYQRS	SSPRSSQSSI	KIARVVPLAS	GQRKRGRQSK	DEQLASDNEL	PVSAFQISEM	SLSELOQVLK
NESLSEYQRO	LIRKIRRRGK	NKVAARTCRQ	RRTDRHDKMS	HYI*		

FIG. 29

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T19E7.2b (spliced)

gaATGTCACCT TCCATCTGAT TTTCCTCCT CTCTTCTGGC ATCCTCTACC ACCACCAACA CCACCAAGAC
 CGCTCCAGCA GCTGTCAACT CTTTGTGACGA ACAAGAAGAA GAATCCAAGA AGATACTGAA CATGTACGTT
 CAAATGTTCA ATCAACAACA GGTGGATCAA CACGGCCATC ATCACCAAGA TCCATACGGG TATTGAGGAG
 TCTCGAGCAD TTTTGACAGA GGTTCGGCAA CATGCACTA GGTCTACATT TTTTCTGAA TTTTCTGAA
 TCAAGCAGTT GTATCAATTC GAGAGATTCA TCAATGATCAT TCAATATCAA TCCATCTC TTTTCTGAA
 TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA
 CTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA
 TGAATTCCTA TCAACGTGCT CTCGGCTCTC TTCCGAATCT CCACCATACA CCTCAGAGAG CTCATCCGGA
 AGTCAGGACT CTCGTTTCTA CCGAAAGTTG GCTCCATCCA TCTGATCAGG CTAGCAAGCA TCTGCTCTC
 CACGTTTCTA ACAATCTTCT ATTAAGATCG CGAGAGTTGT TCTACTGGCC AGCGGAGATG CGATGCTCTC
 ACCTCAATCC AAGGATGAGC AGCTGGCCAG TGACAACGAG CTTCCTCTCT CCGGCTTCTA CATTCTGGAG
 ATGTCATTAA GCGAGTTGCA ACAAGTGTG AGAAGCGAGA GTCTCAGCGA GTATCAAGCA CATTCTCTCT
 GCAAGATTCT TCGACGCGCA AAGATGAGC TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA TTTTCTCTCA

gaagc cctcttttat cacataaat ctcggtcgaa acctatttaa
 agccacataa ttaaagataa ttaattccgc cacaataatc gtttttttct tctttgccgt gtctcatttc
 attttgatct actctttcct cccttcggat tctttgattt cccagtgaag tacctcacc acttcaatcc
 ccacaaagtg agcaaccctt atcttgcaac agttttatca tctcttcac ataccagtt tgataattta
 ttatctgac cccatccctt tctcgcctct cattagtatc ctagtttttc atttgagccc ggagctcaga
 ctacatctcc gaatcatcat acaaatagat agaaacgggt ctcgtgacga agaatacgt gcaccacacg
 acccccccct cctgttcacc cccatacacc tgaaaaatat gatctttaca gttattttcta ttatatcctc
 aaatctctcg taatatcgta tcaatttcct cttctttttt gtcattttca atttttctca aattttctcag
 atctattctt tttcttgat ttttggaaact tgtatccctc ctccatcccc agacttcccc ttcccagtta
 ctcttgatca ttttcatata tgtccatata tcgtttgaat ctctcattta

T19E7.2b (conceptual translation)

MSLPDFASS LLASSTTNT TNTAPAAVNS FDEQEEESKK ILNMYLOMFN QQQVDQHGHH HQHPYAYSGV
 SSTFDRVFPT SNYAYIGMON DSLQAVVSNG QIDYDHSYQS TGQTPLSPLI IGSSGRQQQT QTSPGVSIVT
 ATATQSLFDP YHSQRHSFSD CTTDSSSTCS RLSSSPRYT SESSTGTHES RFYGKLAPSS GSRYQRSSSP
 RSSQSSIKIA RVVPLASGQR KRGRQSKDEQ LASDNELPVS AFQISEMSLS ELQQVLKNES LSEYQRQLIR
 KIRRRGKNKV AARTCRQRRT DRHDKMSHYI *

FIG. 30

T19E7.2a (spliced)

[illegible]

ataaaatctc	ggtcgaaacc	ttattaaagc	cacataatta	aagataatta	attccgccac	aataatcggt
ttttttcttct	ttgccgtgtc	tcatttccatt	ttgatctact	ctttcctccc	ttcggattct	ttgatttccc
agtgaaatac	ctcaccctact	tcaatcccca	caaagtgagc	aaccctctatc	ttgcaacagt	tttatcatct
cttcatcata	cccagtttga	taattttatta	tctgatcccc	atccccttgt	cgccctctcat	tagtatccta
gttttttcatt	tgagcccgga	gctcagacta	catctccgaa	tcatacata	aatagataga	aacgggtctc
gtgacgaaag	aatacgtgca	ccacacgacc	cccccatcct	gttcaccccc	atacacctga	aaaatatgat
ctttacagtt	atttctatta	tatcctcaaa	tctctcgtaa	tatcgatatca	atttcctctt	ctttttttgtc
atttttcaatt	tttctcaaatt	ttctcagatc	tattcttttt	cttgtaatttt	tggaacttgt	atccctcctc
catcccaga	cttccccttc	ccagttactc	ttgtacattt	tcatatatgt	ccatatatcg	tttgaatctc
tcattttatgg	aaataaattt	gaaaaaatc				

T19E7.2a (conceptual translation)

MGGSSRRQRS	TSATRRDDKR	RRRQCFSSVA	DDEEETTSIY	GVSSIFIWIL	ATSSLILVIS	SPSSNTSIQS
SSYDRITTKH	LLDNISPTFK	MYTDSNNRNF	DEVNHQHQQE	QDFNGQSKYD	YPOFNRP MGL	RWRDDQRMME
YFMSNGPVET	VPVMPILTEH	PPASPFGRGP	STERPTTSSR	YEYSSPSLED	IDLIDVLWRS	DIAGEKGTRQ
VAPADQYECD	LQTLTEKSTV	APLTAEENAR	YEDLSKGFYN	GFFESFNNNQ	YQOKHQQQOR	EQIKTPTLEH
PTQKAELEDD	LFDEDLAQLF	EDVSREEGQL	NQLFDNKQQH	PVINNVSLSE	GIVYNQANLT	EMQEMRDCSN
QVSISTIPTT	STAQPETLFN	VTDSQTVEQW	LPTEVVPNDV	FPTSNYAYIG	MONDSLQAVV	SNGQIDYDHS
YQSTGQTPLS	PLIIGSSGRQ	QQTQTSPPGSV	TVTATATQSL	FDPYHSQRHS	FSDCTTSSS	TCSRLSSESP
RYTSESSTGT	HESRFYGKLA	PSSGSRYQRS	SSPRSSQSSI	KIARVVPLAS	GQRKRGRQSK	DEQLASDNEL
PVSAFOISEM	SLSELQQVLK	NESLSEYQRO	LIRKIRRRGK	NKVAARTCRQ	RRTDRHDKMS	HYI *

FIG. 31

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Human Glycogen synthase kinase-3 beta (GSK-3 beta).

```
1 msgrrprttsf aesckpvqqp safgsmkvsr dkdgskvttv vatpgqgpdv pgevstytdk
61 vngngsfqvv yqaklcdsge lvaikkvlqd krfrnrelqi mrklhcniv rlyffysg
121 ekkdevylnl vldyvpety rvarhysrak qtlpviyvkf ymyqlfrsla yhsfgichr
181 dikpqnllld pdtavklcd fgsakqlvrg epnvsiyicr yyrapelifg atdytssidv
241 wsagcvlael llgqpifpgd sgvdqlveii kvlgtptrq iremnpnyte fkfpqikahp
301 wtkvfrprtp peaiacsr llytptarl pleacahsf delrdpvnkl pgrdtpalf
361 nfttqelssn pplatilpp hariqaaast ptnataasda ntgdrgqtnn aasasasnst
```

FIG. 32

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Human Glycogen synthase kinase-3 alpha (GSK-3 alpha).

```
1 msgggpsggg pggsgrarts sfaepggggg gggggpggsa sgppgtgggk asvgamgggv
61 gasssgggpg gsgggsggpg gagtsfpppg vklgrdsgkv ttvvatlggg persqevayt
121 dikvigngsf gvvyqarlar trelvaikkv lqdkrfknre lqimrkldhc nivrlryffy
181 ssgekkdely lnlvleyvpe tvyrvarhft kakltipily vkvymyqlfr slayihsggv
241 chrdikpqn1 lvdpdtaavl lcdfgsakql vrgepnvsyi csryyrapel ifgatdytss
301 idvwsagcvi aelllgqipf pgdsgvdqlv eiikvlgtpt requiremnpn ytefkfpqik
361 ahpwtkvfks rtppeaialc ssleytpss rlspleacah sffdelrcig tqlpnnrplp
421 plfnfsagel siqpslnail ipphlrspag tttltppssa ltetptssdw qstdatptlt
481 nss
```

FIG. 33

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Mouse Glycogen synthase kinase-3 beta.

```
1 msgprtttsf aesckpvqqp safgsmkvsr dkdgskvttv vatpgggpdr pgevsytdtk
61 vngngsfgvv yqaklcdsge lvaikkvlqd krknrelqi mrklhdhcniv rlyffysg
121 ekkdevylnl vldyvpety rvarhysrak qtlpviyvk ymyqlfrsla yhsfgichr
181 dikpqnlld pdtavklcd fgsakqlvrg epnvsyicsr yyrapelifg atdytssidv
241 wsagcvlael llgqpifpgd sgvdqlveii kvltptreq iremnpnyte fkfpqikahp
301 wtkvfrprtp peaiialcsrl leytparlt pleacahsff delrdpnvki pngrdtpalf
361 nfttqelssn pplatilipp hariqaaasp panataasdt nagdrqgtnn aasasasnst
```

FIG. 34

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Mouse Glycogen synthase kinase-3 alpha (GSK-3 alpha).

```
1 masttamdvl eelssdssek qrsvnildsf vkdmferias easflarqar nstinsreiq
61 tairlllpge lcrrgtgcgk asvwamgggv gasssgvvgg sggpgstsfl qpgvklghds
121 rkvtvvtv gqdpersgev actdikvign gsfgvvyqew ladtrelvai kkvlqdkrfk
181 yrelqimckl dhcnivrlqy ffyssgekkd dlylnlvley vpetvyxvar hftkakliip
241 iiyvkvyq lfrslayihs qgvchrdir lvdpdailk lcdfgsakql vlgttvapel
301 ytssidvxa gcvlaellls qpifpgdngv dqlveiikvl gtptrequire mmpkytefkf
361 pqikahpwtk vfksrtaprp lhsalacwst hhtqgsphlr lvptaslmnc gvsgpapqrp
421 ptspcstsvl vicpsnhlsm pfssllt
```

FIG. 35

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GSK-3 [*Caenorhabditis elegans*].

```
1 mnkqliscsl ksgkqvtmvy asvatdgvdq qveisyydqk vngsgfgvv flaklstne
61 mvaikkvlqd krfrkrelqi mrklhpniv klkyffysg ekkdelynl ileyvpety
121 rvarhyskqr qqipmiyvk1 ymyqllrsla yihsigichr dikpqnlid pesgvklcd
181 fgsakylvrn epnvsyicsr yyrapelifg atnytnsidv wsagtvmael llgqpifpgd
241 sgvdqlveii kvlgtptreq iqsmnpnyke fkfpqikahp wnkvrfrvhtp aeaidliski
301 ieytptsrpt pqaacqhaff delrnpdarl psgrplptle mdgpmgtgei sptsgdvagp
361 sa
```

FIG. 36

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***sgg-1* (GSK-3) inhibits constitutive SKN-1 nuclear accumulation and induction of its target gene *gcs-1*.**

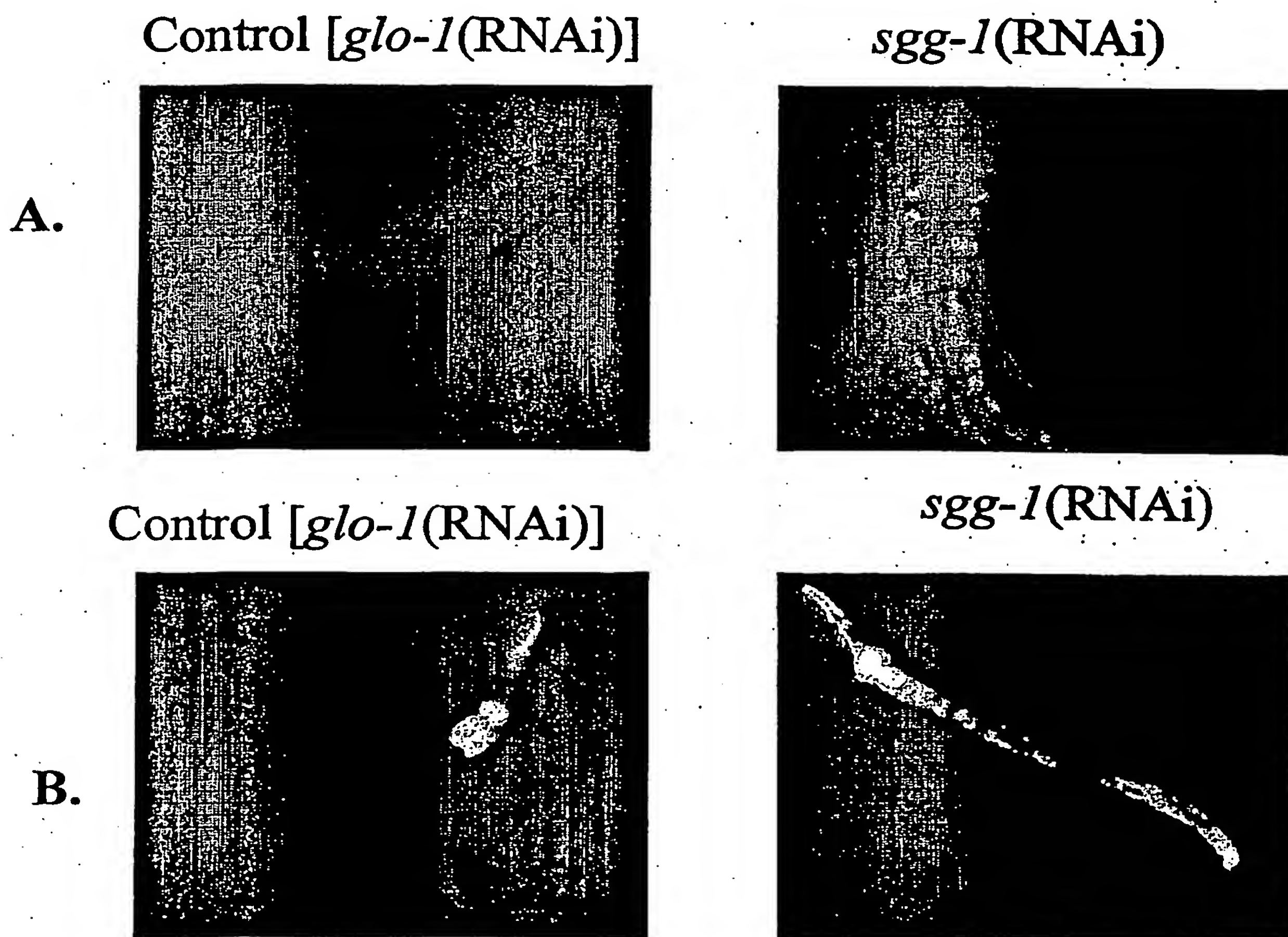


FIG. 37

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Ala substitution at a predicted GSK-3 phosphorylation site results in nuclear localization of SKN-1

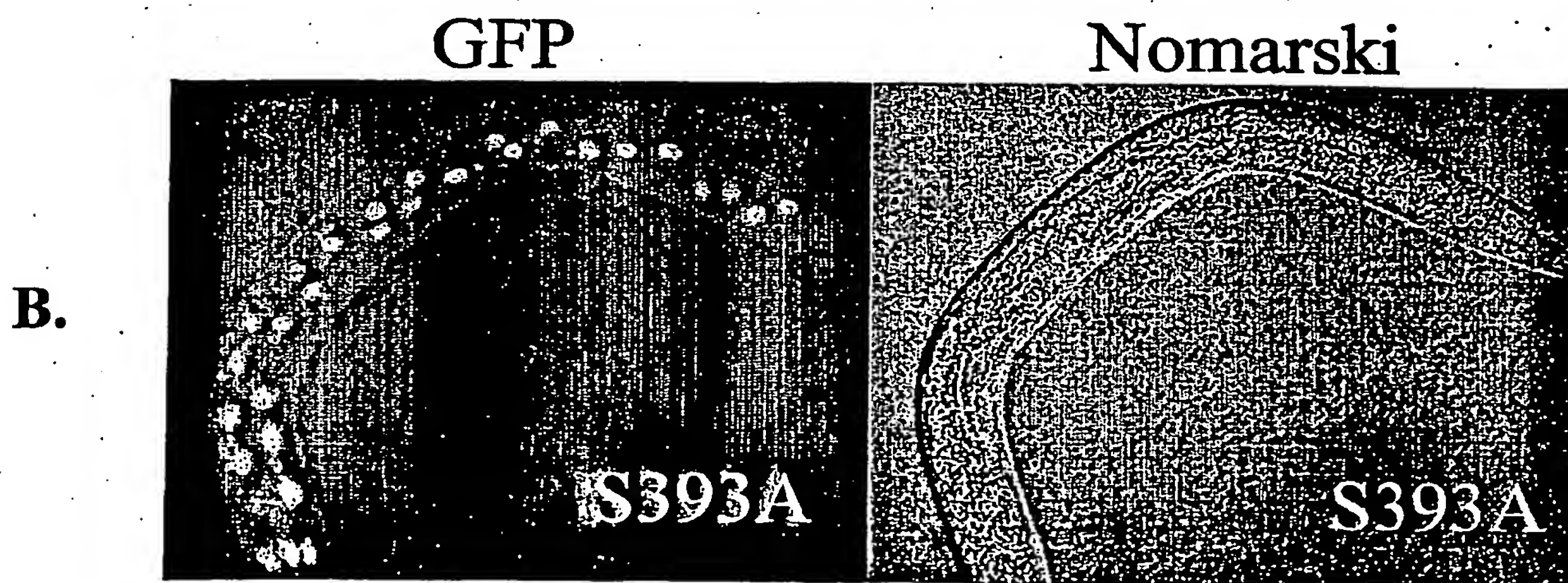
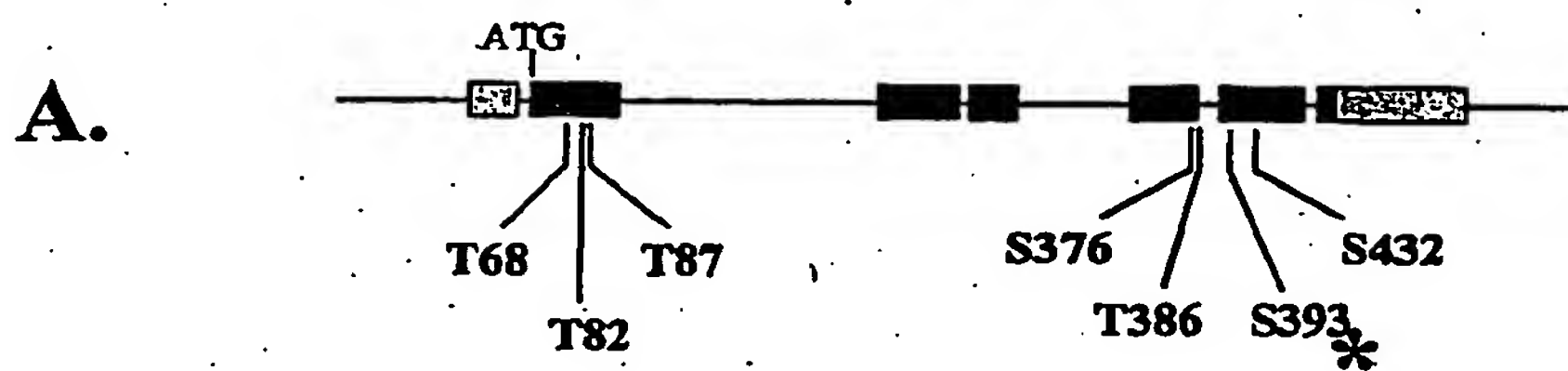
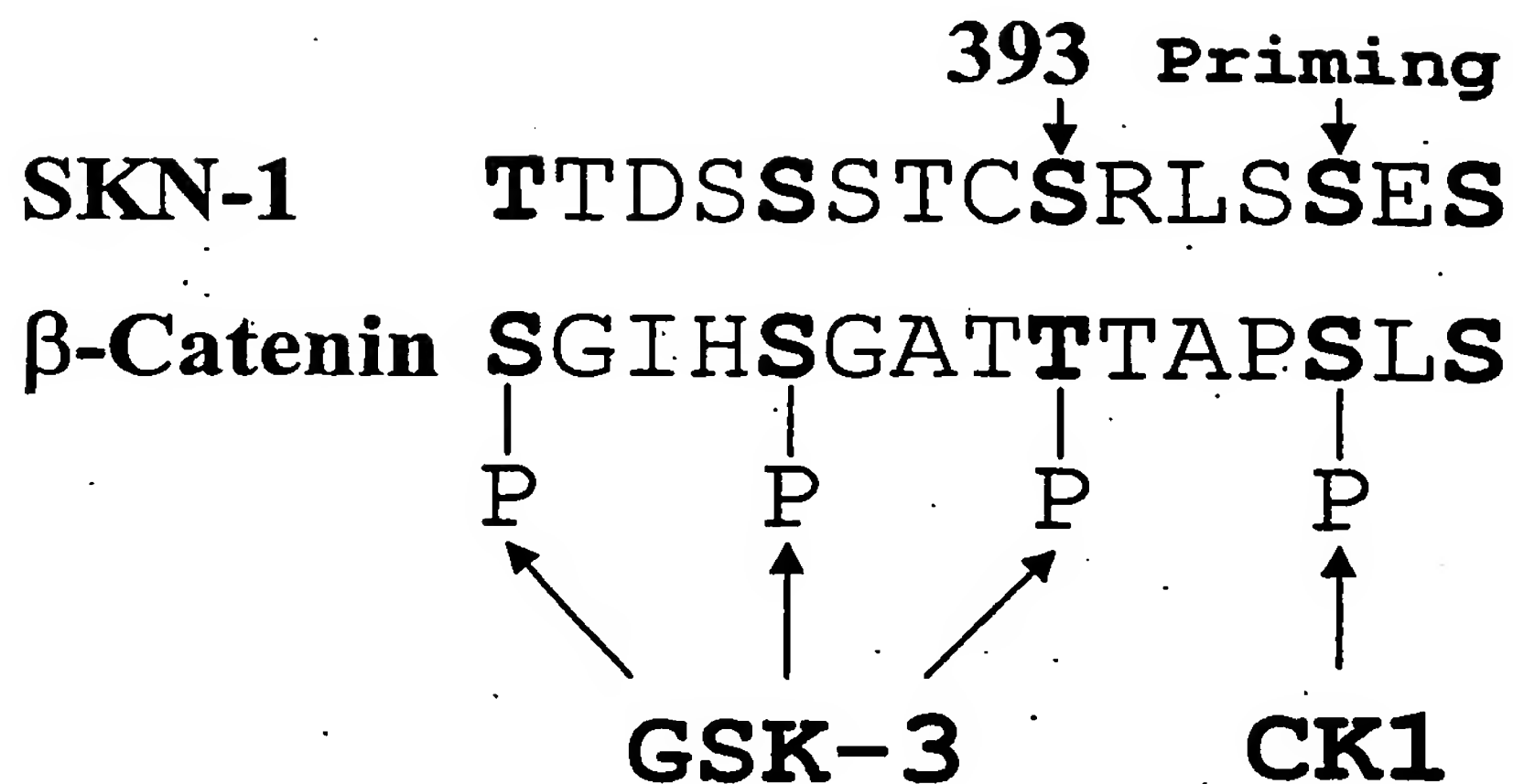


FIG. 38

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A.



Peptides:

1. WT	DCTTDSSSTCSRLSSES	PRYTSE
2. WT+P397	DCTTDSSSTCSRLSSES	PRYTSE *
3. S393A+P397	DCTTDSSSTCARLSSES	PRYTSE

Assay:

B.

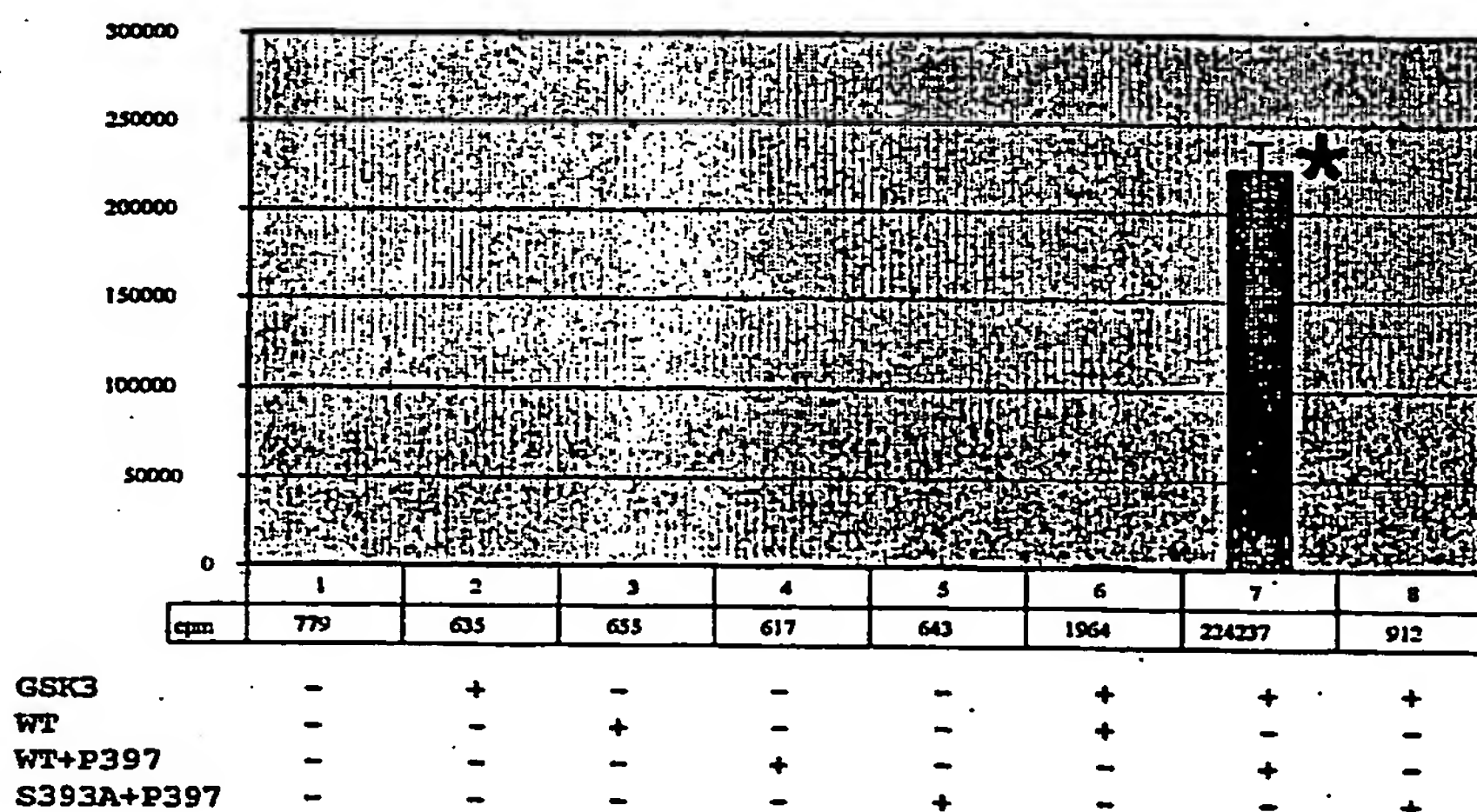


FIG. 39